January 2012

Summary of Selected Cancers

Peterborough County & City

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Reference

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Distribution

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Report Overview

The purpose of the *Summary of Selected Cancers in Peterborough County-City 2012* report is to present information to the public and specialists on the incidence, mortality and trends of selected common cancers among Peterborough County and City residents during the years 1986 to 2007. For the purposes of this document, "common" refers to those cancers whose frequency was greatest during the reporting period. In addition to highlighting trends, the report intends to identify those cancers whose patterns of incidence or mortality differ significantly from the province of Ontario.

Data Sources

The data presented in this report was obtained from several sources:

Ontario Cancer Registry
Cancer data are provided by Cancer Care Ontario (CCO) who manages the Ontario Cancer Registry. Cancer Care Ontario monitors cancer incidence, mortality, survival patterns and trends over time. The Ontario Cancer Registry includes data on all newly diagnosed cases of cancer in Ontario since 1964 and includes approximately 97% of all cancer cases in Ontario. Records of new cancer diagnoses and deaths in Ontario are based on hospital discharge summaries, pathology reports, records from regional cancer centres and death records. This data is disseminated using SEERStat software.

Canadian Community Health Survey
Risk factor data were obtained from the Canadian Community Health Survey (CCHS) conducted by Statistics Canada. The CCHS collects health determinants, health status and health system utilization data from people aged 12 years or older living in households across Canada. People living in First Nations communities are not included in the sample for the CCHS; therefore, data presented for Peterborough do not include residents of Curve Lake or Hiawatha First Nations. Sample sizes for Peterborough are small and as a result there is large degree of variability associated with some of the estimates provided. Estimates from the CCHS have been presented with a 95% confidence interval (that is, 19 times out of 20 the *true* value will fall in this range) to provide an indication of the reliability of the estimate.

More detailed content on a number of risk factors can be found in the Peterborough County-City Health Unit's *Community Assessment Report 2010*, available:
http://www.pcchu.ca/Plans/Community%20Assessment%20Report%202010%20-November%2011.pdf

Glossary

Incidence and Mortality Rates
The number of new events that occur in a defined period. For incidence rates, the event is a new case of cancer; in mortality rates, the event is a death attributable to cancer. The denominator is the population at risk of experiencing the event during this period. Rates are calculated from the formula:

$$number\ of\ new\ events\ in\ defined\ period \div average\ population\ during\ defined\ period$$

Often these figures are quite small and are therefore expressed as multiples of 1,000 (e.g.: 5 cases per 100,000)

p-value
The letter *p* stands for this probability value. Usually found in an expression such as p<.05, which means the probability that this result could have been produced by chance is less than five percent.

Rate Ratio (RR)
The rate occurring in Population A divided by the rate occurring in Population B, which indicates their relative size. These populations may be an exposed and unexposed group, different geographies, or different genders.

Standardization
Age and sex standardization removes the effects of differences in the age and gender structure of populations among areas and over time. These rates show the number of events per 100,000 population that would have occurred in a given area if the age structure of the population of that area was the same as the age structure of a specified standard population. For the purposes of this document, the 1991 Canadian population distribution has been used as standard.

Notes

- Unless otherwise stated, rates presented have been age-standardized.
- "Peterborough" refers to the City of Peterborough and Peterborough County combined.
- In order to evaluate independent samples, Ontario counts and rates do not include Peterborough data.
- Due to the small population size of Peterborough City and County, many cancers occur infrequently. Due to confidentiality issues, statistics fewer than five cases will be suppressed and denoted with "^" in tables, and missing in figures.

Highlights

- Incidence rates of all cancers combined has been increasing since 1986 in Peterborough in both males and females
- Male prostate, female breast, and lung and colorectal cancer among both sexes were the most commonly diagnosed cancers in Peterborough between 1986 and 2007
- Prostate, lung and colorectal cancers accounted for 56% of male cancers in Peterborough; these cancers accounted for 55% of male cancer deaths
- Breast, lung and colorectal cancers accounted for 55% of all cancer diagnoses among Peterborough women and accounted for 52% of all female cancer deaths
- Relative to Ontario, Peterborough males had significantly higher incidence rates of lung cancer (6.5%) and melanoma (24.4%)
- Relative to Ontario, Peterborough males had significantly lower incidence rates of prostate cancer (5.4%)
- Compared to the province, Peterborough women experienced significantly higher rates of lung cancer (21.9%), melanoma (21.5%), and uterine cancers (14.7%)
- Lung cancer mortality rates were significantly higher in Peterborough men (6.6%) and women (14.9%) relative to Ontario
- Between 1986 and 2007, incidence and mortality rates of all selected cancers were significantly higher in Peterborough men relative to Peterborough women
- Mortality rates from all cancers combined among males has been decreasing whereas rates have not changed a great deal among females

Introduction

Cancer is not a single disease; there are more than 100 different types of cancer. Cancers are a class of diseases in which cells show uncontrolled growth or division, invade other tissues, and spread to other locations in the body. These characteristics distinguish them from benign tumours

The number of new cancer cases has been increasing in Ontario each year: an estimated 65,100 new cases of cancer occurred in Ontario in 2010, an increase from estimates of 64,000 cases in 2008. Four types of cancer – male prostate, colorectal, female breast, and lung – account for over half of cancer cases diagnosed in Ontario men and women. The overall prevalence of cancers is also increasing due to the increased number of cancers diagnosed as well as improved survival of cancer patients. Breast, prostate and colorectal cancers were the most prevalent cancers as of January 1, 2005.

Approximately 28,200 cancer deaths occurred in 2010 in Ontario. Male prostate, colorectal, female breast and lung cancers accounted for nearly half of all deaths due to cancer. Lung cancer remains the leading cause of cancer deaths accounting for 28% of cancer deaths in men and 26% of cancer deaths in women.

Cancer affects Canadians 50 years of age or older more than other age groups, representing 88% of new cases and 95% of deaths due to cancer. More men than women will be diagnosed with a new cancer, 51.7% and 48.3%, respectively, and more men will die from cancer, accounting for 52.5% and 47.5% of cancer deaths, respectively. The median age of cancer diagnoses among both sexes is 65 to 69 years old and the median age at death is 70 to 74 years old.

Cancer in Peterborough

Most Common Cancers

In Peterborough 888 new cases of cancer were diagnosed in 2007. The incidence of all cancers combined was significantly higher among males than females (475.5 cases per 100,000 persons compared to 382.2 cases per 100,000, respectively). Incidence of all cancers among both genders has been increasing since 1986, where rates were 388.8 per 100,000 among males and 372.2 per 100,000 among females – Figure 1.

In males, prostate cancer was the most commonly diagnosed cancer with 124 cases in 2007 (126.9 cases per 100,000). The most frequently diagnosed cancer among females was breast cancer with 108 cases in 2007 (98.6 cases per 100,000). Lung cancer also occurs at high rates among both sexes (52.7 cases per 100,000 and 56.2 cases per 100,000) – Table 1. In 2007 males had significantly greater incidence rates of all cancers combined, colorectal, and bladder cancers.

Between 1986 and 2007, the most common cancers diagnosed among Peterborough residents were: lung, colorectal, prostate, breast, non-Hodgkin lymphoma (NHL), bladder, melanoma, leukemia, corpus uteri (uterine), and oral cavity (oral) cancers – Table 2. During this time frame, males had significantly higher incidence of all the aforementioned cancers common to both sexes with the exception of breast cancer.

Cancer Mortality

There were 385 deaths due to cancer in 2007, or 181.2 deaths per 100,000 persons. Males had significantly higher rates of cancer mortality than females between 1986 and 2007. Slightly more females (195, or 50.6%) died from cancer in 2007 than males (n=190). Since 1986, there have only been two other occasions where more females died from cancer than males: 1987 (52.4%), and 1999 (51.7%). While incidence rates of cancers have been increasing since 1986 among both sexes, mortality rates among males have been decreasing whereas mortality rates among females have not varied to a great extent. Lung cancer accounts for the greatest proportion of deaths due to cancer, with 25.3% of deaths in 2007 among men and 31.3% of deaths in women. Lung, colorectal, female breast, and male prostate cancers combined accounted for just over half (205, or 53.0%) the deaths among Peterborough cancer patients in 2007. While some cancers occur with relative frequency, for example melanoma, deaths from these cancers are uncommon.

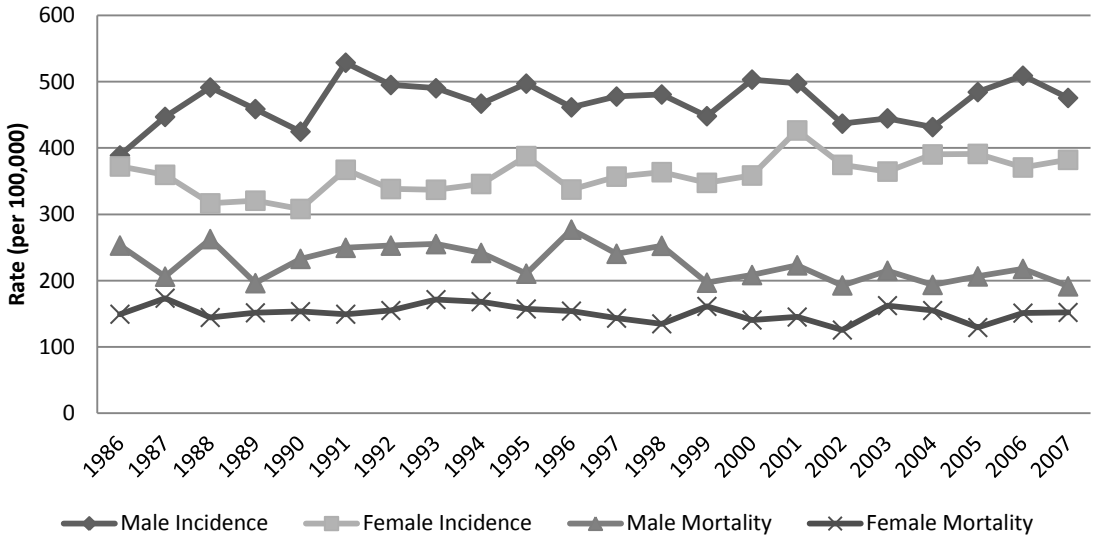


Figure 1. Incidence and mortality rates of all cancers combined in Peterborough by sex; 1986-2007

Table 1. New cancer cases, deaths, and incidence and mortality rates in Peterborough by sex; 2007

Cancer Type	Males		Females	
	Cases	Deaths	New Cases	Deaths
All Cancers Combined	461 (475.5)*	190 (191.5)	427 (382.2†)	195 (152.1†)
Lung	52 (52.7)	48 (48.0)	64 (56.2)	61 (48.4)
Colorectal	65 (68.3)	25 (24.7)	46 (34.7†)	20 (14.4)
Breast	^	0	108 (98.6)	26 (21.7)
Prostate	124 (126.9)	24 (23.7)	-	-
NHL	15 (15.5)	7 (6.9)	28 (25.2)	11 (7.5)
Leukemia	20 (20.6)	13 (12.7)	18 (15.6)	^
Bladder	26 (25.3)	10 (10.1)	8 (6.1†)	^
Melanoma	24 (27.4)	^	23 (22.7)	^
Uterine	-	-	26 (22.7)	^
Oral	18 (18.8)	7 (7.4)	^	^

* count (rate per 100,000)

† significantly different ($p<0.05$)

Table 2. New cancer cases, deaths, and incidence and mortality rates in Peterborough by sex; 1986-2007

Cancer Type	Males		Females	
	Cases	Deaths	New Cases	Deaths
All Cancers Combined	7,984 (470.8)*	3,846 (225.2)	7,203 (361.6†)	3,309 (150.9†)
Lung	1,381 (79.1)	1,166 (66.8)	1,025 (49.6†)	752 (35.2†)
Colorectal	1,054 (61.3)	514 (30.2)	999 (44.0†)	443(18.6†)
Breast	21 (1.2)	8 (0.5)	1,905 (98.5†)	547 (26.4†)
Prostate	1,977 (113.8)	433 (25.5)	-	-
NHL	348 (21.5)	142 (8.5)	283 (13.9†)	122 (5.3†)
Leukemia	292 (17.9)	158 (9.6)	201 (10.0†)	121 (5.4†)
Bladder	387 (22.1)	108 (6.3)	151 (6.9†)	43 (1.8†)
Melanoma	381 (17.6)	53 (3.2)	239 (13.6†)	37 (2.0†)
Uterine	-	-	407 (21.2)	37 (1.7)
Oral	265 (15.9)	98 (5.8)	130 (6.4†)	42 (2.0†)

* count (rate per 100,000)

† significantly different ($p<0.05$)

Key Points

- *The incidence of all cancers combined has been increasing since 1986 in Peterborough and Ontario in both males and females*
- *Male prostate, female breast, and lung and colorectal cancer among both sexes were the most commonly diagnosed cancers*
- *Mortality rates from all cancers combined among males has been decreasing whereas rates have not changed a great deal among females*
  Males had significantly higher incidence and mortality rates of all cancers

Types of Cancer in Peterborough and Ontario

The proportion of cancer cases and deaths among Peterborough men and women for the period of 1986 to 2007 is highlighted in Figures 2 through 5. The figures also indicate provincial distributions of cancer cases and deaths for comparison. Among men, prostate (24.8%), lung (17.3%), and colorectal (13.2%) were the most frequently diagnosed cancers during this period; the same three cancers account for most of the cancer-related deaths among Peterborough men (11.3%, 30.3%, and 13.4%, respectively). Breast (26.4%), lung (14.2%), and colorectal (13.9%) cancers were the most frequently diagnosed cancers in Peterborough women as well and also accounting for the largest proportion of deaths (16.5%, 22.7%, and 13.4%, respectively). These distributions are generally similar to the province.

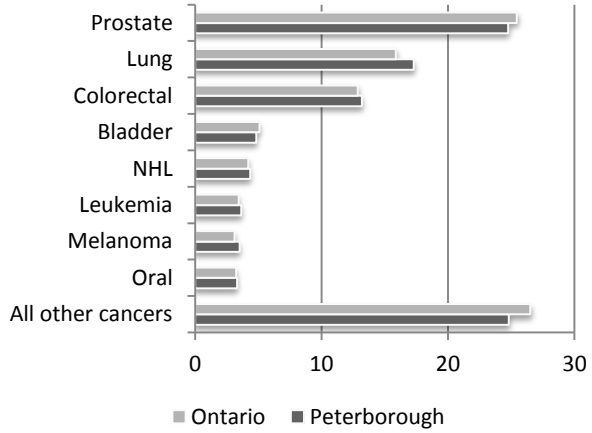


Figure 2. Proportion of new cases for selected cancer sites in Peterborough and Ontario males; 1986-2007

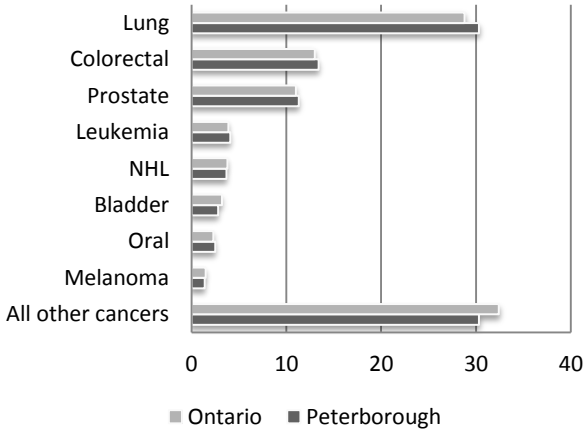


Figure 3. Proportion of selected cancer site deaths in Peterborough and Ontario males; 1986-2007

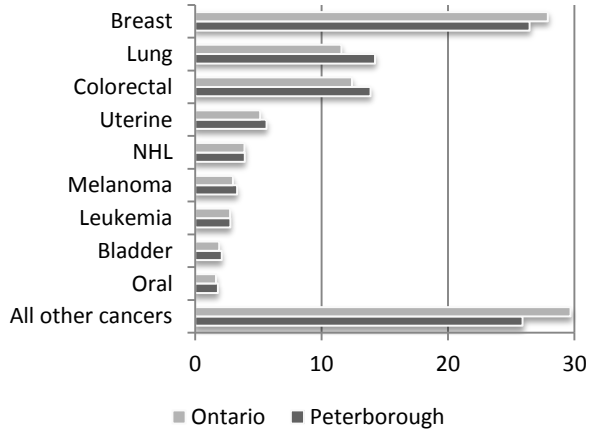


Figure 4. Proportion of new cases for selected cancer sites in Peterborough and Ontario females; 1986-2007

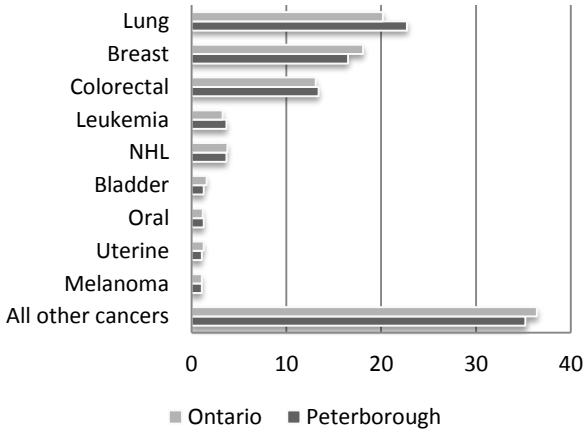


Figure 5. Proportion of selected cancer site deaths in Peterborough and Ontario females; 1986-2007

All Cancers Combined

Incidence

Since 1986, the incidence rate of all cancers combined has been increasing in both males and females in Peterborough and the province, although the difference in rates between Ontario and Peterborough during this frame was not significantly different – Figure 6. Between 1986 and 2007, relative to Ontario males, Peterborough males had significantly higher incidence rates of lung cancer (6.5%) and melanoma (24.4%); however, the incidence rate of prostate cancer was significantly lower than the province by 5.6% - Table 3. During the same time frame, incidence rates of lung (21.9%), melanoma (21.5%), and uterine cancers (14.7%) were significantly higher among Peterborough women compared to those in Ontario.

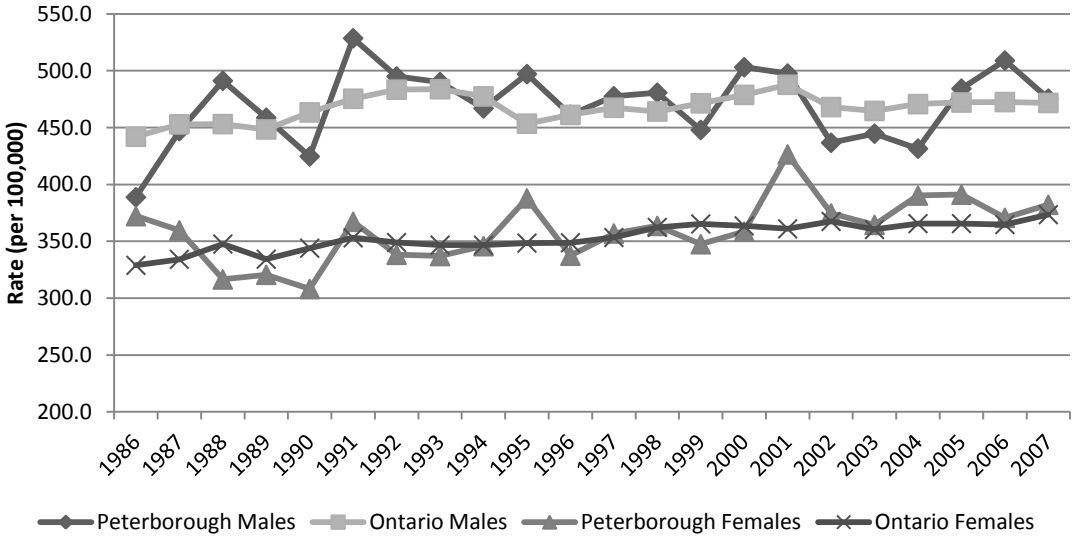


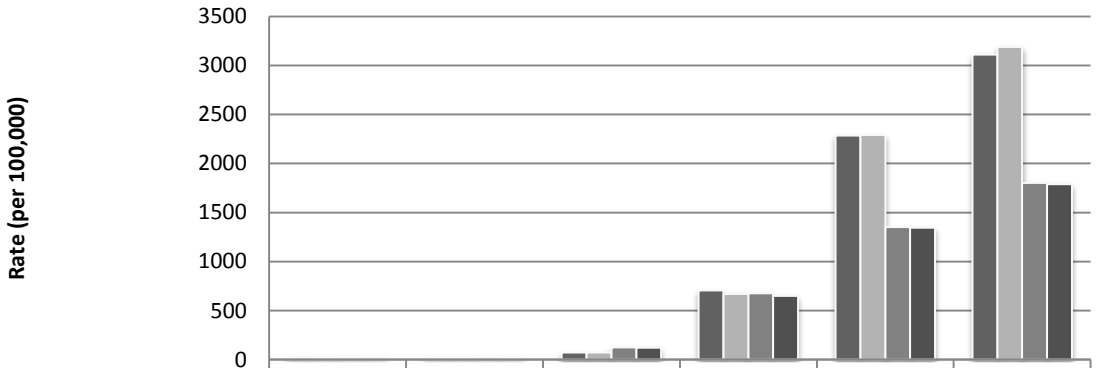
Figure 6. Incidence rates for all cancers combined in Peterborough and Ontario by sex; 1986-2007

Table 3. Incidence rates and rate ratios (RR) of selected cancers in Peterborough and Ontario by sex; 1986-2007

Cancer Type	Males			Females		
	Peterborough	Ontario	RR	Peterborough	Ontario	RR
All Cancers Combined	470.8	467.5	1.00	361.6	354.9	1.02
Lung	79.1	74.3	1.07*	49.6	40.7	1.22*
Colorectal	61.3	38.9	1.04	44.0	42.0	1.05
Breast	1.2	0.9	1.36	98.5	100.1	0.98
Prostate	113.8	120.5	0.94*	-	-	-
NHL	21.5	19.3	1.15	13.9	13.9	1.00
Leukemia	17.9	16.2	1.10	10.0	9.8	1.02
Bladder	22.1	24.4	0.91	6.9	6.4	0.91
Melanoma	17.6	14.2	1.24*	13.6	11.2	1.22*
Uterine	-	-	-	21.2	18.5	1.15*
Oral	15.9	14.7	1.08	6.4	5.9	1.09

* significantly different ($p<0.05$)

The incidence of cancers increases as individuals age: in Peterborough between 1986 and 2007, 66.0% of all new cancers among men and 58.5% among women occurred in persons older than 65 years of age. Figure 7 illustrates the differences in incidences rates of all cancers combined in Peterborough and Ontario by sex. In Peterborough, females ages 20 to 44 are significantly more likely to be diagnosed with cancer than males (RR=1.71); however, females 65 to 74 and 75 years of age and older are less likely than males to be diagnosed with any new cancer (RR=0.59 and 0.58, respectively). Peterborough males aged 45 to 64 had significantly higher incidence rates compared to those in the same cohort in Ontario (RR=1.05); there were no other significant differences in incidence rates between Peterborough and Ontario among age groups.



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	19.7	18.7	72.5	705.3	2,283.8	3,110.2
Ontario Males	18.5	17.5	71.3	670.9	2,291.7	3,189.7
Peterborough Females	15.9	14.6	124.2	674.9	1,351.6	1,800.9
Ontario Females	15.4	16.9	121.3	650.0	1,346.0	1,790.4

Figure 7. Age-specific cancer incidence rates for all cancers combined in Peterborough and Ontario by sex; 1986-2007

Mortality

Mortality rates for all cancers combined in Peterborough and Ontario males have been in decline since 1986. However, mortality rates in Peterborough females have remained relatively consistent compared to rates in the province which have been declining slowly – Figure 8. Between 1986 and 2007, relative to Ontario, men in Peterborough had significantly higher mortality rates of lung cancer by 6.6% – Table 3. Similarly, during the same time frame, mortality rates of lung cancer were significantly higher by 14.9% among Peterborough women relative to those in Ontario.

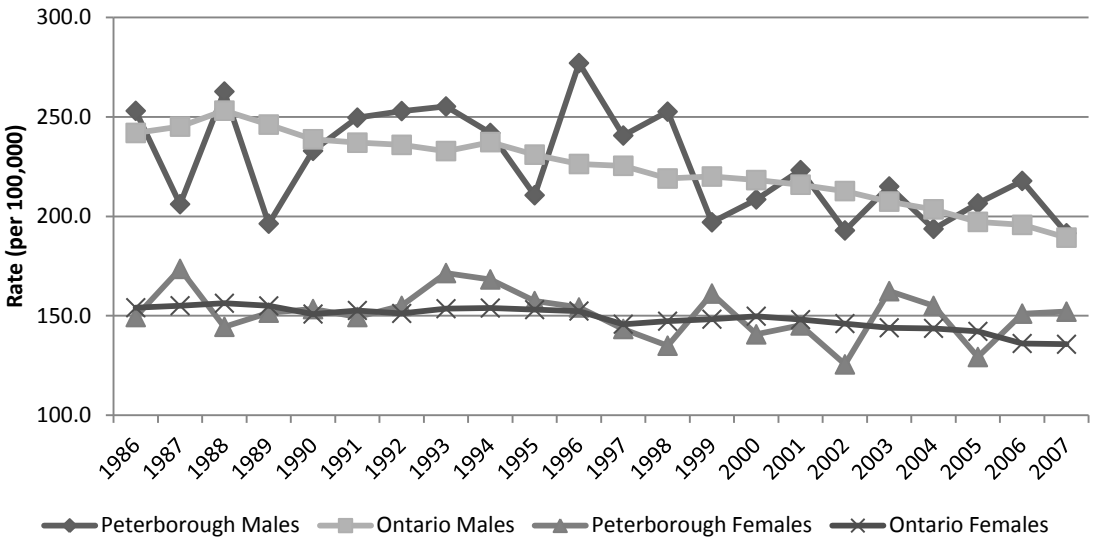


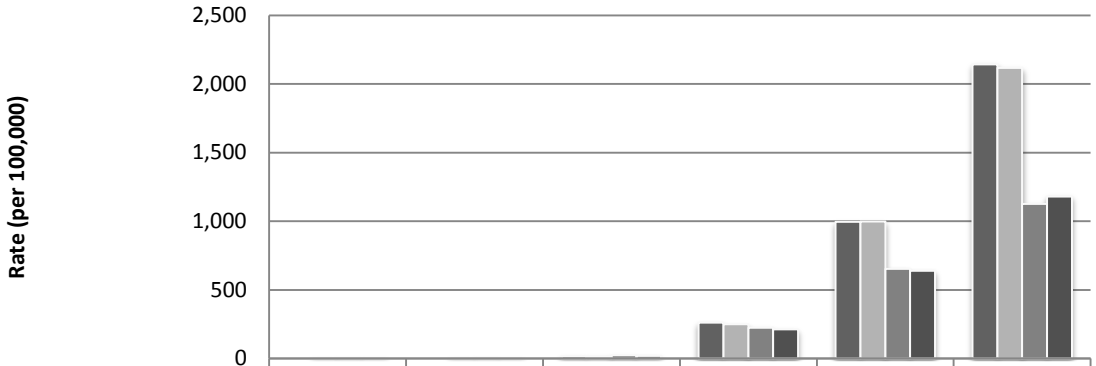
Figure 8. Mortality rates for all cancers combined in Peterborough and Ontario by sex; 1986-2007

Table 4. Mortality rates and rate ratios (RR) of selected cancers in Peterborough and Ontario by sex; 1986-2007

Cancer Type	Males			Females		
	Peterborough	Ontario	RR	Peterborough	Ontario	RR
All Cancers Combined	225.2	221.5	1.01	150.9	187.2	1.02
Lung	66.8	62.7	1.07†	35.2	30.6	1.15†
Colorectal	30.2	28.9	1.05	18.6	18.7	1.00
Breast	0.5	0.2	1.87	26.4	27.3	0.97
Prostate	25.5	26.4	0.97	-	-	-
NHL	8.5	8.3	1.02	5.3	5.6	0.93
Leukemia	9.6	8.7	1.11	5.4	4.9	1.11
Bladder	6.3	7.4	0.85	1.8	2.1	0.84
Melanoma	3.2	3.2	1.00	2.0	1.7	1.18
Corpus uteri	-	-	-	1.7	1.9	0.89
Oral	5.8	4.9	1.19	2.0	1.8	1.12

† significantly different ($p<0.05$)

Mortality from cancers also increases with age and Figure 9 illustrates differences in mortality rates of all cancers combined in Peterborough and Ontario by age group and by sex. Between 1986 and 2007, 75.3% and 72.6% of all deaths among Peterborough males and females, respectively, occurred among those aged 65 and older. Women in Peterborough aged 20 to 44 were more likely to die of cancer than men (RR=1.39). Conversely, women aged 45 to 64, 65 to 74, and those aged 75 and older were less likely to die from all cancers combined then men (RR=0.85; 0.66; and 0.53, respectively). There were no significant differences in cancer mortality rates by age group between Peterborough and Ontario in either sex.



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males			17.2	262.7	995.7	2,143.5
Ontario Males	3.3	3.7	15.9	250.6	998.7	2,116.0
Peterborough Females	3.7	4.3	23.9	224.2	654.0	1,126.8
Ontario Females	2.6	2.7	20.0	213.4	639.0	1,179.9

Figure 9. Age-specific cancer mortality rates for all cancers combined in Peterborough and Ontario by sex; 1986-2007

Key Points

- *Peterborough males have higher incidence rates of lung cancer and melanoma but lower incidence rates of prostate cancer compared to the province*
- *Peterborough females have higher incidence of lung, melanoma, and uterine cancers compared to the province*
- *Mortality rates due to lung cancer are higher in Peterborough than Ontario*

Lung Cancer

Lung cancer occurs when cells develop abnormally in one or both of the lungs and grow out of control to form a tumour. There are two major types of lung cancer: non-small cell and small cell; over 75% of all people diagnosed with lung cancer have non-small cell lung cancer. Risk factors associated with developing lung cancer include current or former smoking, second-hand exposure to smoke, and environmental factors such as increased exposure in the home or in the workplace to harmful substances such as radon or asbestos.

In both sexes, lung cancer is the second most common cancer, accounting for approximately 4,100 (12.3%) and 3,700 (11.6%) cancer diagnoses in Ontario in 2010, respectively. Lung cancer is the leading cause of cancer deaths in males (3,700, or 25.3%) and females (3,000, or 22.0%) in Ontario.

Incidence

In 2007 there were 116 cases of lung cancer diagnosed in Peterborough; 64 (55.2%) of these cases were female. The incidence of lung cancer between 1986 and 2007 was significantly higher among Peterborough men than women by 59.5% (average incidence 79.1 per 100,000 compared to 49.6 per 100,000, respectively) – Figure 10. While the incidence of lung cancer among men (in both Peterborough and Ontario) has been decreasing since 1986, incidence among women has been increasing.

Older adults, that is, those aged 65 and older, accounted for the majority of cancer cases in Peterborough between 1986 and 2007. Older men accounted for 70.3% of male lung cancer cases and approximately 64.8% of female cases were aged 65 or older. Peterborough women aged 45 to 64, 65 to 74, and those aged 75 and older were less likely to be diagnosed with lung cancer than men between 1986 and 2007 (RR=0.80; 0.59; and 0.45, respectively) – Figure 9. During the same time frame, incidence rates among Peterborough men aged 45 to 64 were significantly higher compared to Ontario by 12.5%. Similarly, lung cancer incidence rates among women 45 to 64 and 65 to 74 were significantly higher compared to Ontario by 33.4% and 23.6%, respectively – Figure 11.

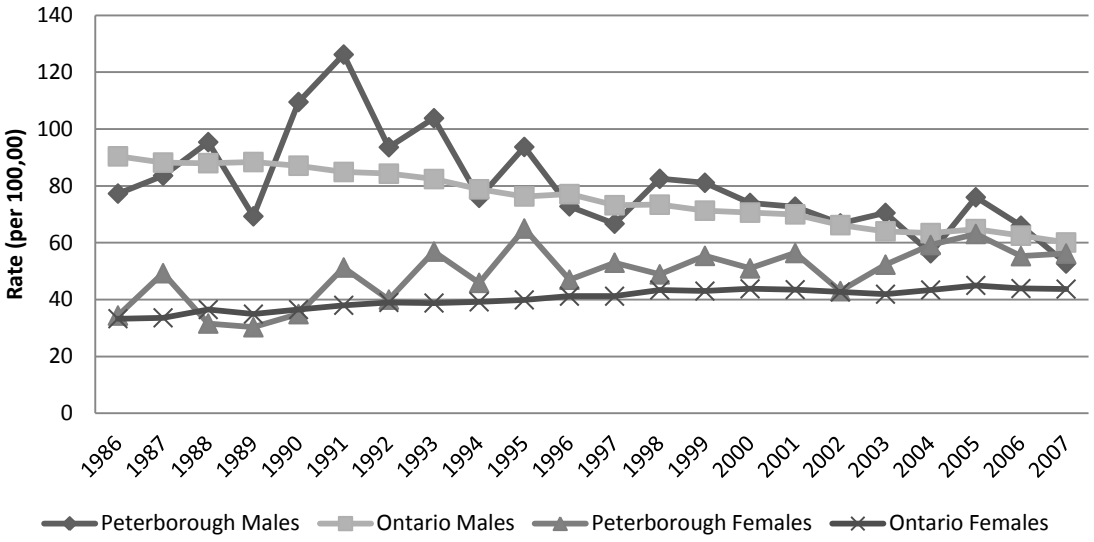
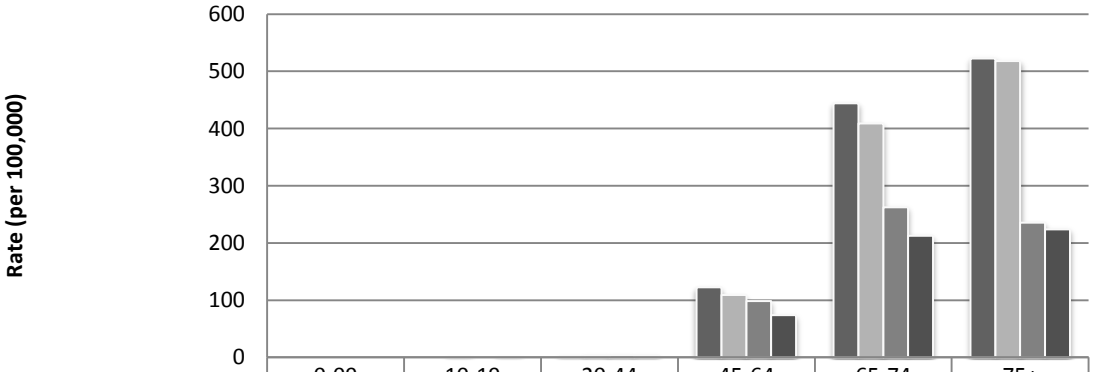


Figure 10. Incidence rates of lung cancer in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0	2.5	122.8	444.3	522.9
Ontario Males	0	0.1	3.5	109.1	409.0	518.4
Peterborough Females		0	4.0	98.6	262.7	235.5
Ontario Females	0	0.1	3.7	73.9	212.6	224.2

Figure 11. Age-specific lung cancer incidence rates in Peterborough and Ontario by sex; 1986-2007

Mortality

There were 109 deaths attributable to lung cancer in Peterborough in 2007, 56.0% (n=61) of those occurred in women. Since 1986, 2007 was the first year that there were more lung cancer deaths among females than males. Lung cancer mortality rates between 1986 and 2007 were significantly higher among Peterborough men than women by 89.8% (66.8 per 100,000 compared to 35.2 per 100,000, respectively) – Figure 12. Lung cancer mortality rates among men (in both Peterborough and Ontario) have been decreasing since 1986. However, similar to incidence rates, mortality among women has been increasing. Whereas rates among women in Peterborough show continued increases,

the rates among Ontario women stabilized around 2000. Compared to the province, Peterborough males and females had 6.6% and 14.9% higher mortality rates between 1986 and 2007, respectively. Lung cancer mortality rates increase with age and between 1986 and 2007, 75.1% of lung cancer deaths among men and approximately 69.5% of deaths among women occurred in persons aged 65 or older. Figure 13 illustrates differences in lung cancer mortality rates in Peterborough and Ontario by age group and sex. Peterborough women aged 45 to 64, 65 to 74, and those aged 75 years and older were less likely to die of lung cancer than Peterborough men (RR=0.74; 0.54; and 0.37, respectively). Peterborough males aged 75 and older were 10.7% more likely to die from lung cancer than their provincial counterparts. Compared to Ontario, Peterborough women aged 45 to 64 and those 65 to 74 years of age were more likely to die of lung cancer by 30.6% and 14.0%, respectively.

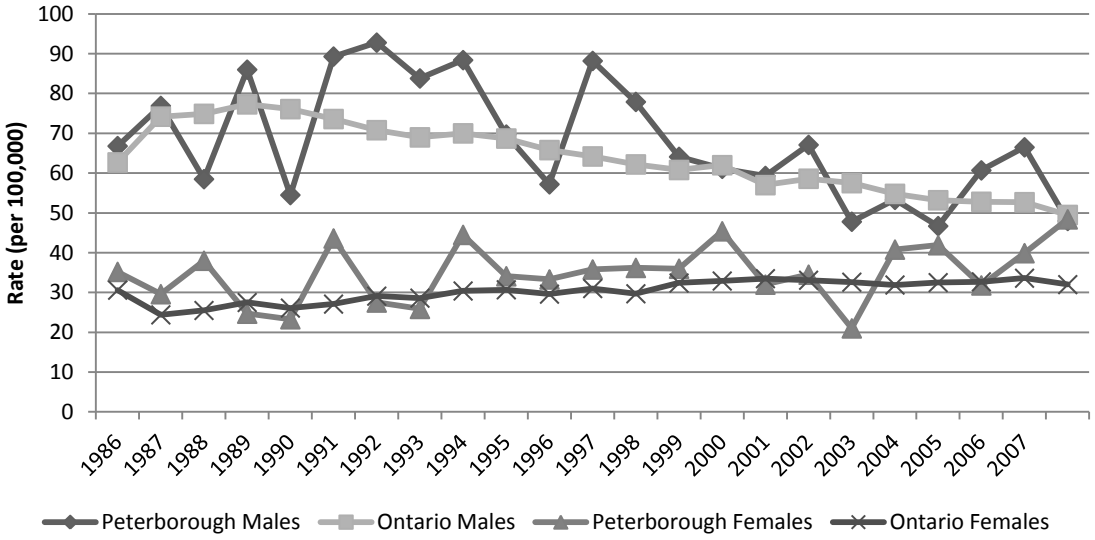
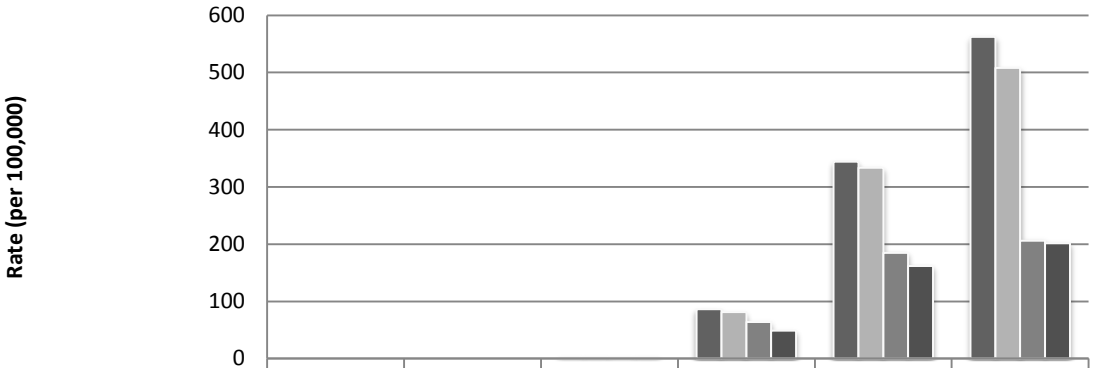


Figure 12. Lung cancer mortality rates in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0	1.8	86.5	344.0	562.3
Ontario Males		0	2.0	81.1	333.6	507.8
Peterborough Females		0	1.7	63.9	184.6	206.3
Ontario Females		0	2.0	48.9	162.0	201.7

Figure 13. Age-specific lung cancer mortality rates in Peterborough and Ontario by sex; 1986-2007

Key Points

- *While lung cancer incidence and mortality rates are decreasing in men, rates are increasing in women*
- *2007 marked the first year since 1986 that more women died of lung cancer in Peterborough than men*
- *Both incidence and mortality rates are significantly higher in Peterborough than in Ontario*

Colorectal Cancer

Colon and rectal cancers arise from the same type of cell and have many similarities and are often referred to collectively as "colorectal cancer". The cells lining the colon or rectum can sometimes become abnormal and divide rapidly forming benign tumours or growths called polyps. Not all polyps will develop into colorectal cancer; however, colorectal cancer almost always develops from a polyp. Many factors such as age, diet and smoking increase the risk of developing colorectal cancer.

In Ontario, an estimated 4,500 males and 3,800 females were diagnosed with colorectal cancer in 2010 (13.5% and 11.9% of cancer diagnoses, respectively). Colorectal cancer also has a significant impact on mortality in men and women accounting for an estimated 12.7% (n=1,850) and 11.4% (n=1,550) of all cancer deaths in 2010, respectively.

Incidence

There were 111 new cases of colorectal cancer in Peterborough in 2007 with a small majority (65, or 58.6%) of cases occurring in men. The incidence of colorectal cancer between 1986 and 2007 was significantly higher among Peterborough men than women by 39.3% (average incidence 61.3 per 100,000 compared to 44.0 per 100,000, respectively) – Figure 14. Incidence of colorectal cancer among Peterborough males appears to be increasing slightly while rates in Ontario are relatively stable. Rates of colorectal cancer in women have been decreasing in both Peterborough and the province. There were no significant differences in rates between Peterborough and Ontario in either sex.

Between 1986 and 2007, 70.4% of cases in men, and approximately 77.3% of cases among women occurred in those aged 65 years of age and older. Peterborough females aged 45 to 64, 65 to 74, and those aged 75 and older were less likely to be diagnosed with colorectal cancer than males (RR=0.69; 0.63; and 0.83, respectively) – Figure 15. Compared to Ontario during the same time frame, incidence rates among women 75 years of age and older were significantly higher by 11.1%.

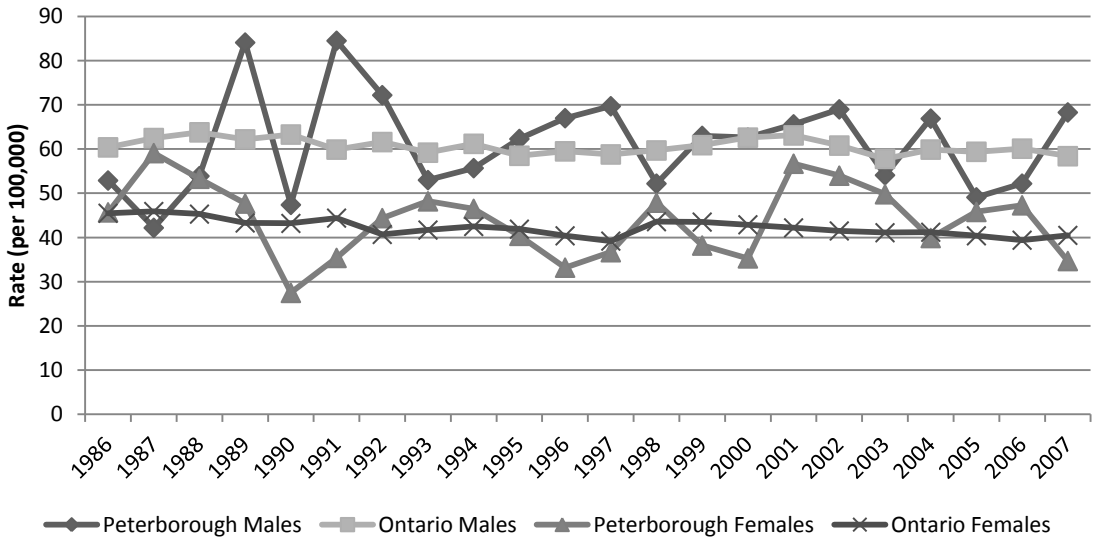
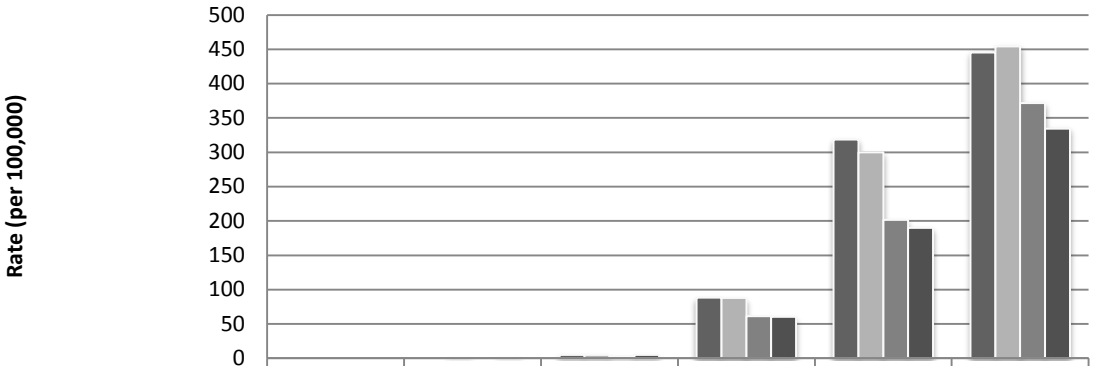


Figure 14. Incidence rates of colorectal cancer in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0	5.0	88.2	318.7	445.1
Ontario Males		0.1	4.9	87.7	299.9	454.2
Peterborough Females	0		3.0	61.3	201.4	371.5
Ontario Females		0.2	4.7	60.5	189.8	334.6

Figure 15. Age-specific colorectal cancer incidence rates in Peterborough and Ontario by sex; 1986-2007

Mortality

There were 45 deaths attributable to colorectal cancer in Peterborough in 2007, 25 of which (55.6%) occurred in men. Male colorectal cancer mortality rates between 1986 and 2007 in Peterborough were significantly higher than rates in women by 62.4% (30.2 per 100,000 compared to 18.6 per 100,000, respectively) – Figure 16. Colorectal cancer mortality rates in both Peterborough and Ontario have been decreasing since 1986; compared to the province, there were no significant differences in mortality rates between in either sex.

The majority of colorectal cancer deaths among men (75.1%) and women (69.5%) occurred in older adults aged 65 and older. Peterborough women aged 45 to 64 (RR=0.55), 65 to 74 (RR=0.61), and those aged 75 years and older (RR=0.63) were less likely to die of colorectal cancer than men of the same age groups. Compared to Ontario, there were no significant differences among different age groups in either sex – Figure 17.

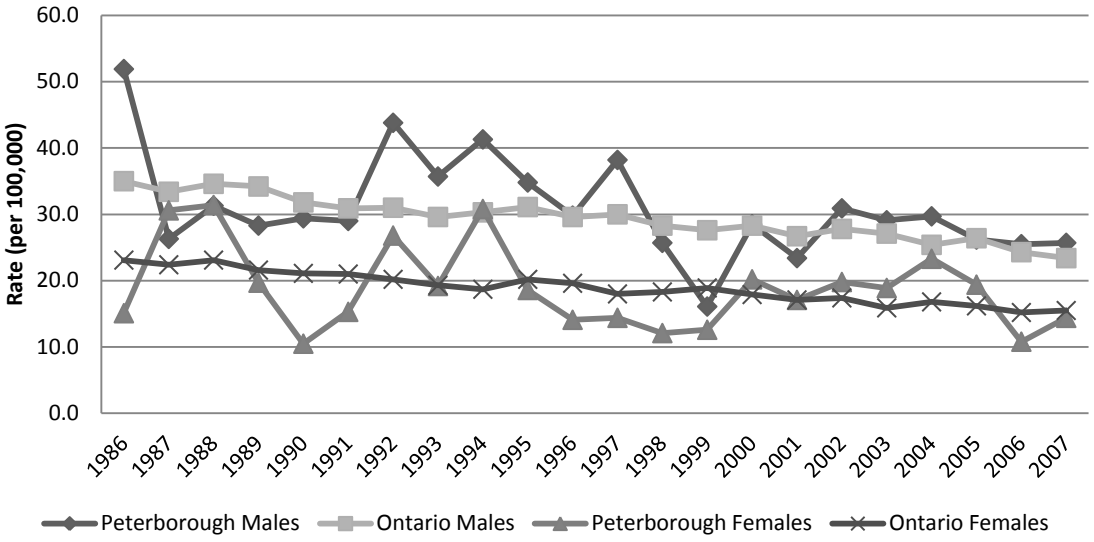
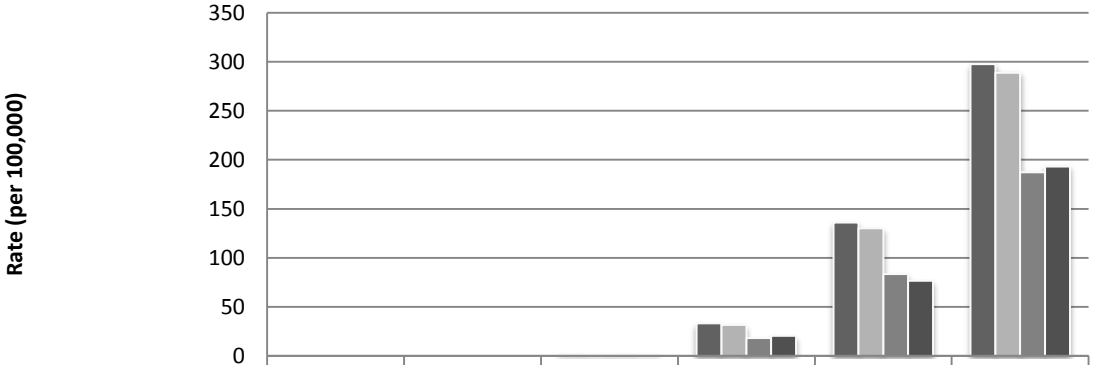


Figure 16. Colorectal cancer mortality rates in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0	1.9	33.4	136.3	297.6
Ontario Males		0	1.4	31.7	130.4	288.9
Peterborough Females	0	0	1.7	18.5	83.6	187.4
Ontario Females		0	1.3	20.7	76.8	193.2

Figure 17. Age-specific colorectal cancer mortality rates in Peterborough and Ontario by sex; 1986-2007

Key Points

- *Peterborough men were more likely to get and die from colorectal cancer than women*
- *Mortality rates in both men and women in Peterborough and the province have been decreasing since 1986*
- *In general, incidence and mortality rates of colorectal are similar in Peterborough and Ontario; however, there appears to be a slow increase in incidence rates in Peterborough men*

Breast Cancer

While breast cancer can occur in men, this report will focus on female breast cancer. There are many types of breast cancer with the most common forms beginning in the milk ducts, lobules or glands. A woman's risk of developing breast cancer is increased if she has a family history of the disease. Other risk factors include age, smoking, and diet. Breast cancer is the most common female cancer and is the second leading cause of cancer deaths in women.

In 2010, it is estimated that 8,900 Ontario women were diagnosed with breast cancer and that 2,100 died from the disease accounting for 28% of all female cancers and 15.4% of female cancer deaths.

Incidence

There were 108 new cases of breast cancer in Peterborough in 2007. Between 1986 and 2007 the incidence of breast cancer among Peterborough women decreased slightly, whereas rates in Ontario have been relatively stable since the early 1990's – Figure 18. There were no significant differences in rates between Peterborough and Ontario.

Similar to other cancers, incidence of breast cancer peaks in older age groups: 66.4% of cases between 1986 and 2007 in Peterborough occurred in women aged 65 years and older. The greatest number of breast cancers between 1986 and 2007 occurred among women 65 to 74 years of age with 371 cases or 39.9% – Figure 19. There were no significant differences between rates in Peterborough compared to Ontario by age group.

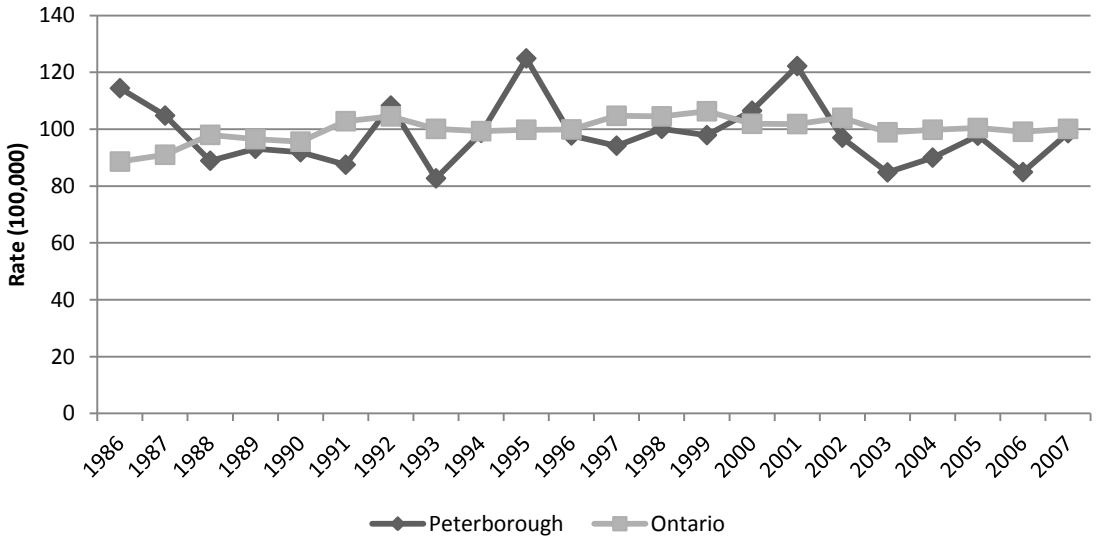
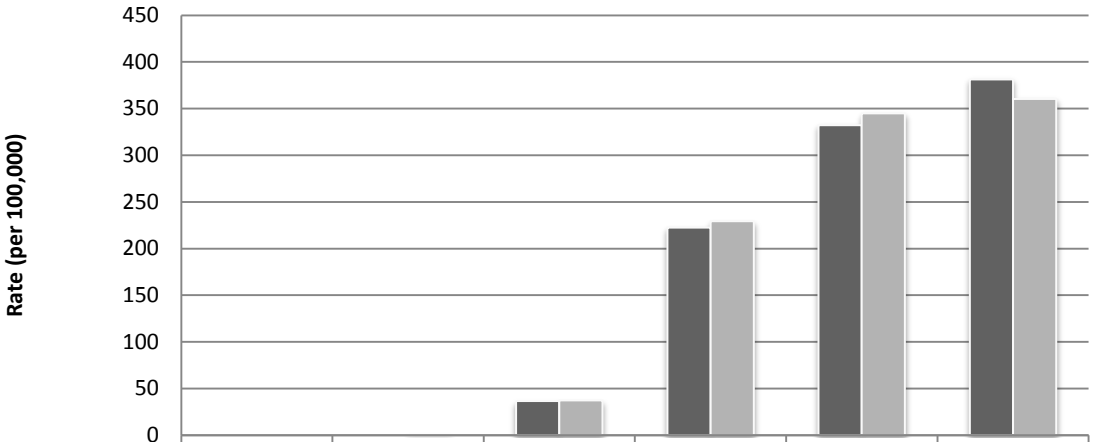


Figure 18. Incidence rates of breast cancer in Peterborough in Ontario; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough	0	0	36.5	222.5	332.4	381.3
Ontario	0	0.1	37.4	229.3	344.8	360.5

Figure 19. Age-specific breast cancer incidence rates in Peterborough and Ontario; 1986-2007

Mortality

In 2007, there were 26 deaths attributable to breast cancer in Peterborough. Mortality rates in both Peterborough and Ontario decreased considerably between 1986 and 2007: rates decreased by 87.6% in Peterborough and 49.5% in the province – Figure 20.

Approximately 63.0% of breast cancer deaths in Peterborough between 1986 and 2007 occurred in women aged 65 and older. Similar to the number of new cases, the greatest number of deaths (n=263, or 29.9%) occurred in women aged 65 to 74 years old. However, age-specific mortality rates indicate that the highest mortality rates occur in women aged 75 and older – Figure 21. Age-specific mortality rates were not significantly different comparing Peterborough and Ontario.

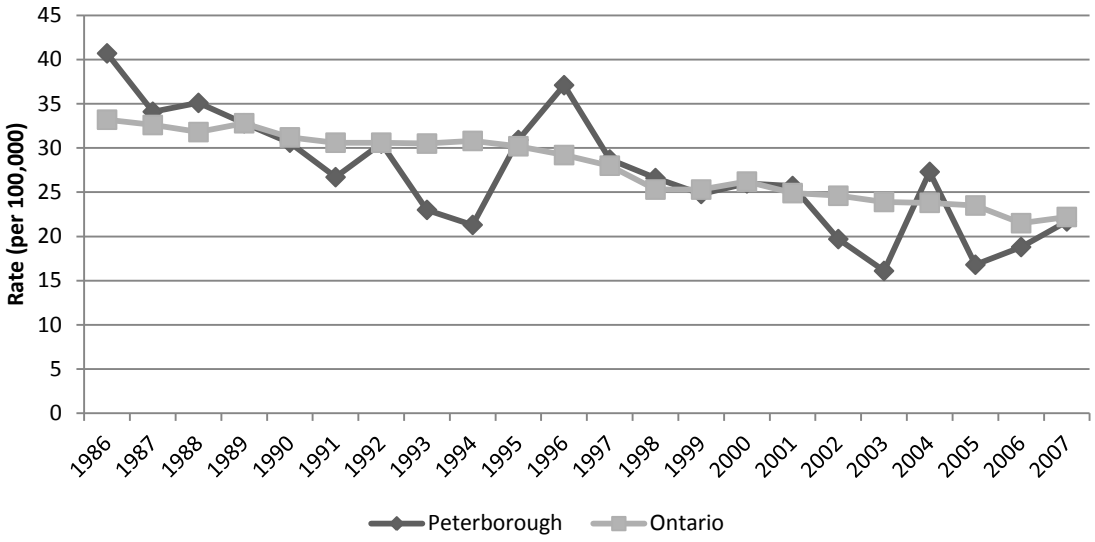
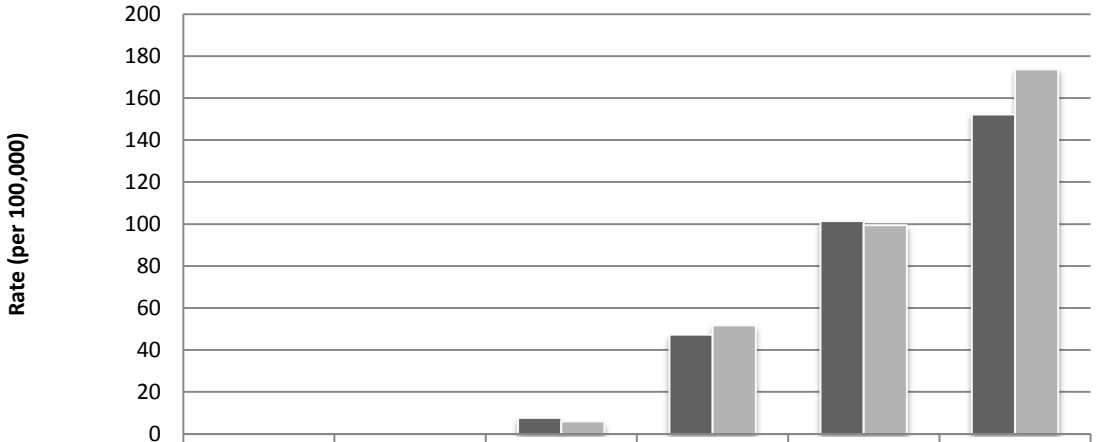


Figure 20. Breast cancer mortality rates in Peterborough in Ontario; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough		0	7.7	47.4	101.5	152.3
Ontario	0		6.0	51.8	99.5	173.8

Figure 21. Age-specific breast cancer mortality rates in Peterborough and Ontario; 1986-2007

Key Points

- *Incidence rates of breast cancer in Peterborough women were lower in 2007 compared to 1986*
- *Peterborough women exhibited significant reductions in breast cancer mortality between 1986 and 2007*
- *There were no significant differences between incidence or mortality rates when comparing Peterborough to Ontario*

Prostate Cancer

Most prostate cancers are adenocarcinomas (i.e.: a tumour of a gland or gland-like structure) and begin as either of two precursor lesions. Increased age, family history, ethnicity, and lifestyle factors such as diet and physical activity are all considered risk factors.

Prostate cancer is the most common cancer among men, though many more men are diagnosed with prostate cancer than die from it. There were an estimated 10,200 new cases and 3,700 deaths due to prostate cancer among Ontario men in 2010, representing 30.6% of all male cancers and 11.3% of cancer deaths in men.

Incidence

There were 124 cases of prostate cancer diagnosed among Peterborough men in 2007. The incidence of prostate cancer has been increasing in both Peterborough and Ontario since 1986 – Figure 22. Incidence rates in Peterborough have doubled during this time frame and rates in the province have increased by approximately 70%. However, incidence rates of prostate cancer in Peterborough between 1986 and 2007 were significantly lower than Ontario by 5.6%.

Age-specific prostate cancer incidence rates increase dramatically after the age of 65 and, in Peterborough, men aged 65 to 74 years of age accounted for 42.8% of all new prostate cancer cases between 1986 and 2007. Incidence of prostate cancer among males aged 75 and older was significantly lower by 13.1% in Peterborough compared to Ontario – Figure 23.

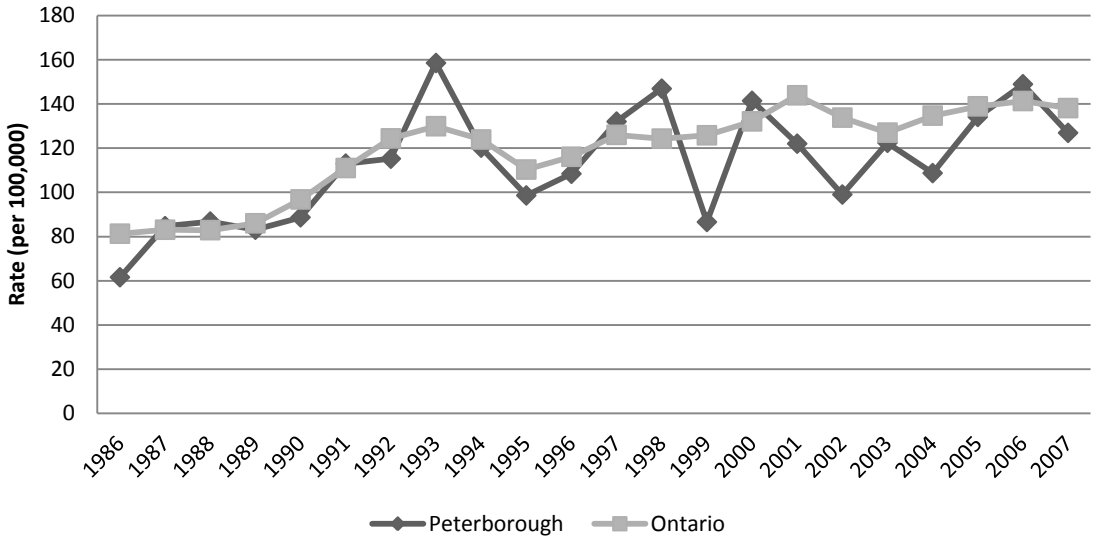
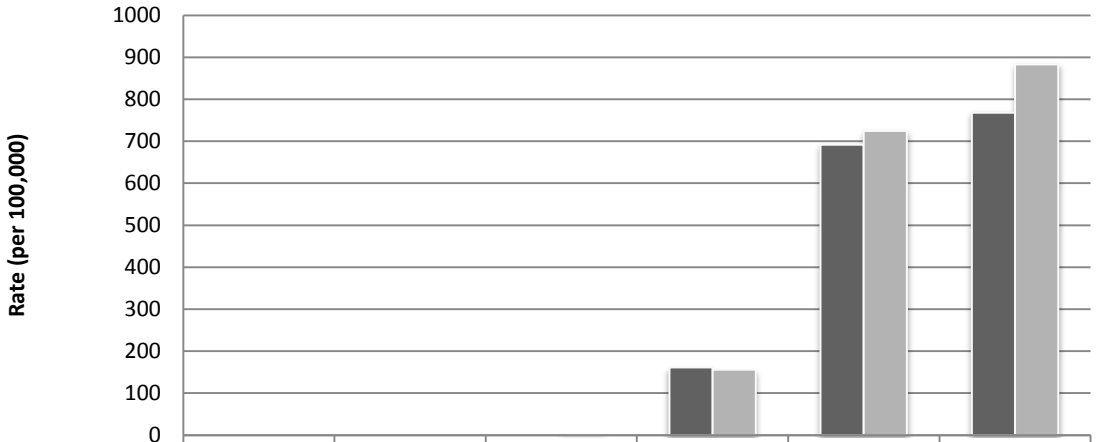


Figure 22. Incidence rates of prostate cancer in Peterborough in Ontario; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough	0	0		161.0	691.5	768.2
Ontario			0.7	155.9	724.9	883.5

Figure 23. Age-specific prostate cancer incidence rates in Peterborough and Ontario; 1986-2007

Mortality

In 2007, there were 24 deaths attributable to prostate cancer in Peterborough. Mortality rates in Ontario have been declining since the early 1990's whereas recent trends in Peterborough indicate rates have been increasing since 2000 – Figure 24. Rates in Peterborough between 1986 and 2007 were not significantly different than the province.

Almost all, or 92.8%, of prostate cancer deaths in Peterborough between 1986 and 2007 occurred in men aged 65 years and older. Deaths from prostate cancer are extremely rare among males younger than 45 years of age and mortality rates quadruple when comparing rates among men aged 65 to 74 to those 75 years and older – Figure 25. Compared to the province, there were no significant differences between age groups.

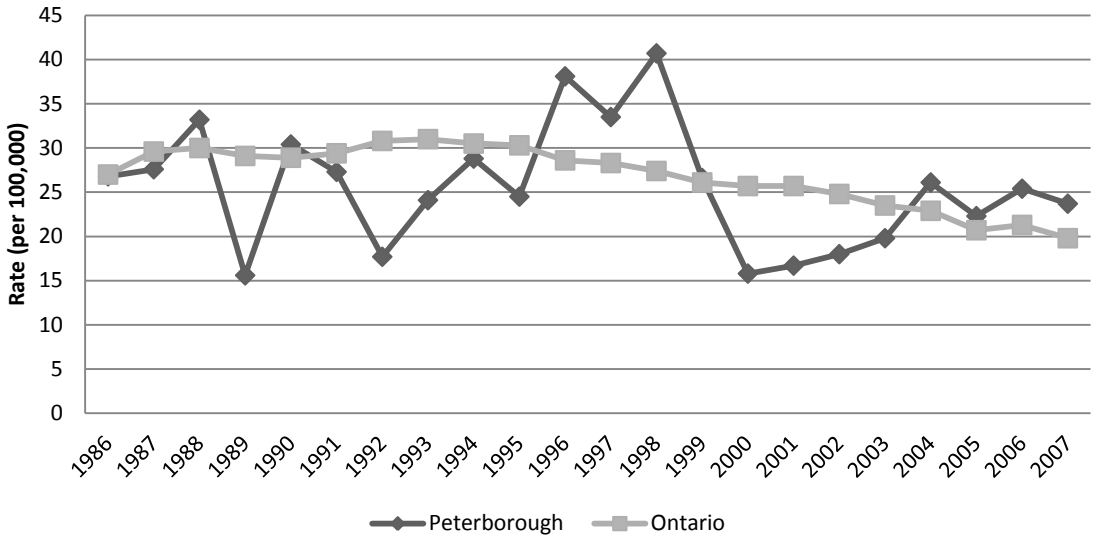
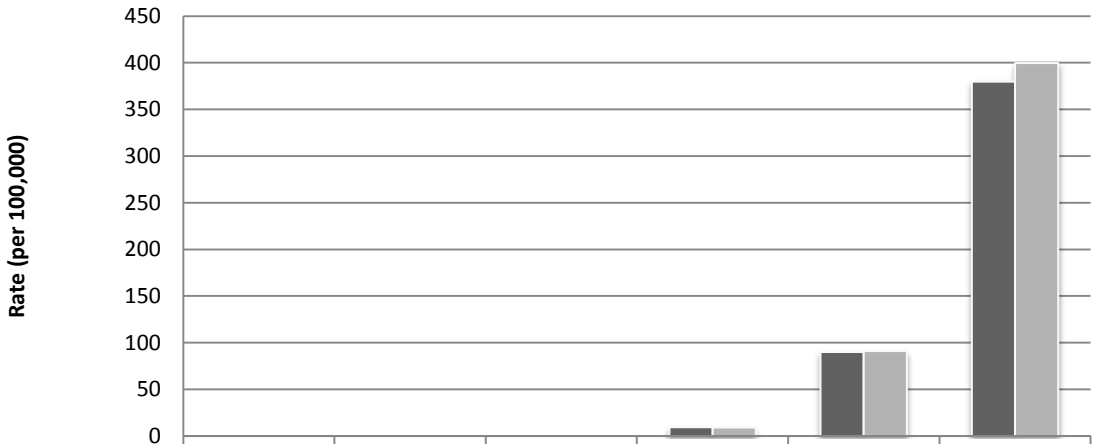


Figure 24. Prostate cancer mortality rates in Peterborough in Ontario; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough	0	0	0	9.6	90.2	379.9
Ontario	0		0	9.0	91.2	399.7

Figure 25. Age-specific prostate cancer mortality rates in Peterborough and Ontario; 1986-2007

Key Points

- *Incidence rates of prostate cancer have been increasing since 1986*
- *Peterborough men have significantly lower rates of prostate cancer compared to Ontario*
- *Since 2000, there has been an increasing trend in mortality rates among Peterborough men*
- *Males over the age of 75 were most likely to die from prostate cancer*

Non-Hodgkin Lymphoma (NHL)

There are many different types of NHL which are any of a large group of cancers of lymphocytes (white blood cells). These types can be divided into aggressive (fast-growing) or indolent (slow-growing) and they can be formed from either the B-cells or T-cells of the immune system. Risk factors include chronic disorders of the immune system or the chronic administration of drugs to suppress the immune system, increasing age, and prior exposure to radiation or chemotherapy.

Approximately 1,600 (4.8%) males and 1,400 (4.4%) females were diagnosed with NHL in Ontario in 2010; provincially, NHL accounted for 4.9% (n=710) of male and 4.3% (n=590) of female cancer deaths in the same year.

Incidence

There were 43 cases of NHL diagnosed in Peterborough in 2007, the majority of which (28, or 65.1%) occurred in women. The incidence rates of NHL between 1986 and 2007 was significantly higher in Peterborough men than women by 54.7% (average incidence 21.5 per 100,000 compared to 13.9 per 100,000, respectively) – Figure 26. Incidence rates of NHL have been increasing among both males and females in Peterborough and Ontario. Rates among Peterborough women increased sharply beginning in the early 2000's and, as a result, by 2007 women had higher incidence of NHL than men. Between 1986 and 2007 incidence rates in Peterborough were similar to the province.

Just over half of new NHL cases among Peterborough men between 1986 and 2007 and 63.5% of cases among women were aged 65 or older. A third of cases among males occurred in those aged 45 to 64 years old, whereas women over the age of 75 accounted for the most cases (35.5%). Age-specific rates of NHL, however, are larger among older age groups – Figure 27. Incidence rates of NHL among Peterborough women aged 20 to 44 (RR=0.44), 45 to 64 (RR=0.66) and those 75 years and older (RR=0.68) between 1986 and 2007 were significantly lower than men of those age groups. Rates in Peterborough males aged 20 to 44 years old were significantly greater than their provincial counterparts by 41.6%, while there were no significant differences between Peterborough and Ontario females by age group.

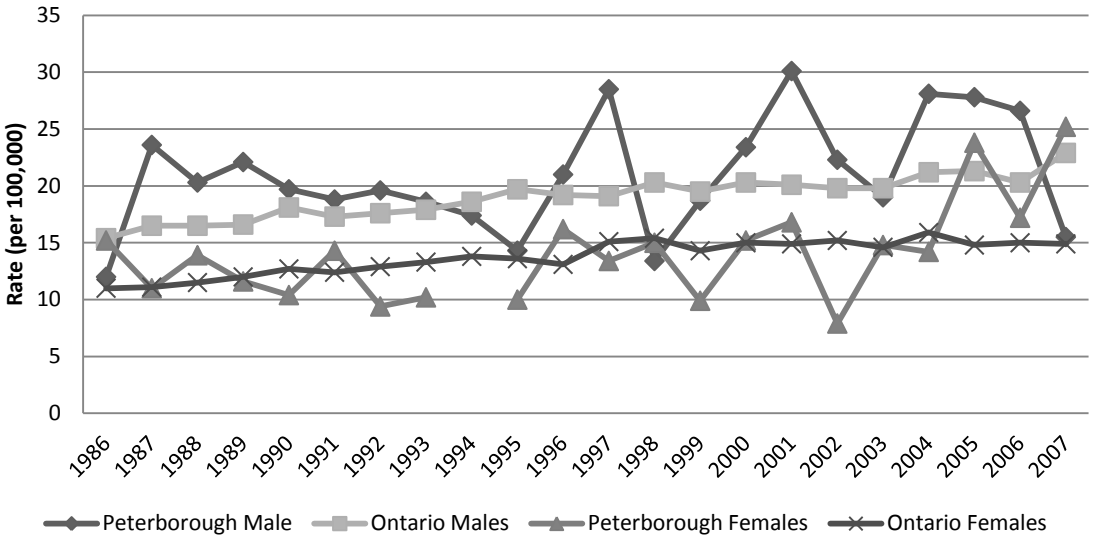
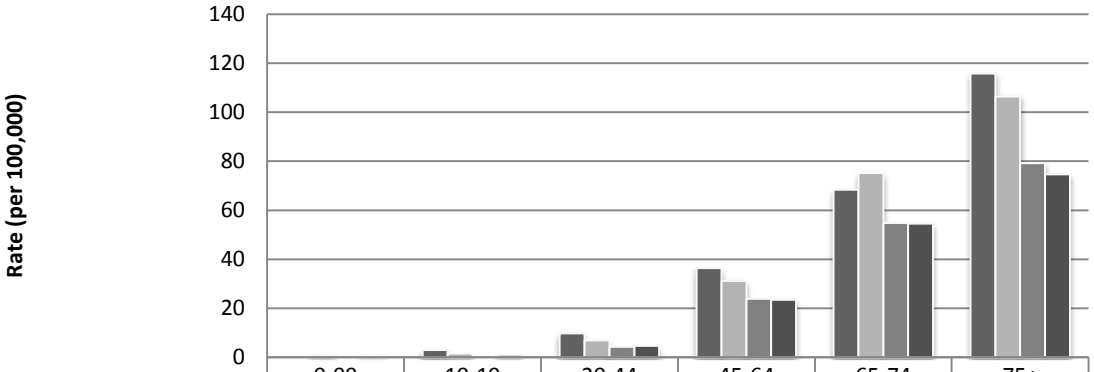


Figure 26. Incidence rates of NHL in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	3.1	9.8	36.4	68.4	115.8
Ontario Males	0.9	1.6	6.9	31.2	75.2	106.4
Peterborough Females	0		4.3	23.9	54.8	79.3
Ontario Females	0.5	1.1	4.7	23.6	54.6	74.7

Figure 27. Age-specific NHL incidence rates in Peterborough and Ontario by sex; 1986-2007

Mortality

There were 18 deaths attributable to NHL in Peterborough in 2007, the majority of which (11, or 61.1%) occurred in women. NHL mortality rates between 1986 and 2007 were significantly higher in Peterborough men than women by 60.4% (8.5 per 100,000 compared to 5.3 per 100,000, respectively) – Figure 28. There are many years where fewer than five deaths resulted from NHL and therefore it is difficult to interpret trends in Peterborough, though it appears mortality rates in men have decreased since 1986. However, Ontario data suggest that rates rose through the 1980's and 1990's, but began to

decline in the early 2000's. Mortality rates of NHL among Peterborough men and women were similar to the province between 1986 and 2007.

Between 1986 and 2007, 67.6% of NHL deaths in Peterborough men occurred in persons 65 years of age and older. The large majority (83.9%) of NHL deaths during the same time frame occurring in Peterborough women were also aged 65 and older. Peterborough women aged 45 to 64 (RR=0.51) and those 65 to 74 years of age (RR=0.61) were significantly less likely to die of NHL than men in those age cohorts – Figure 29. There were no significant differences between Peterborough and Ontario males or females by age group.

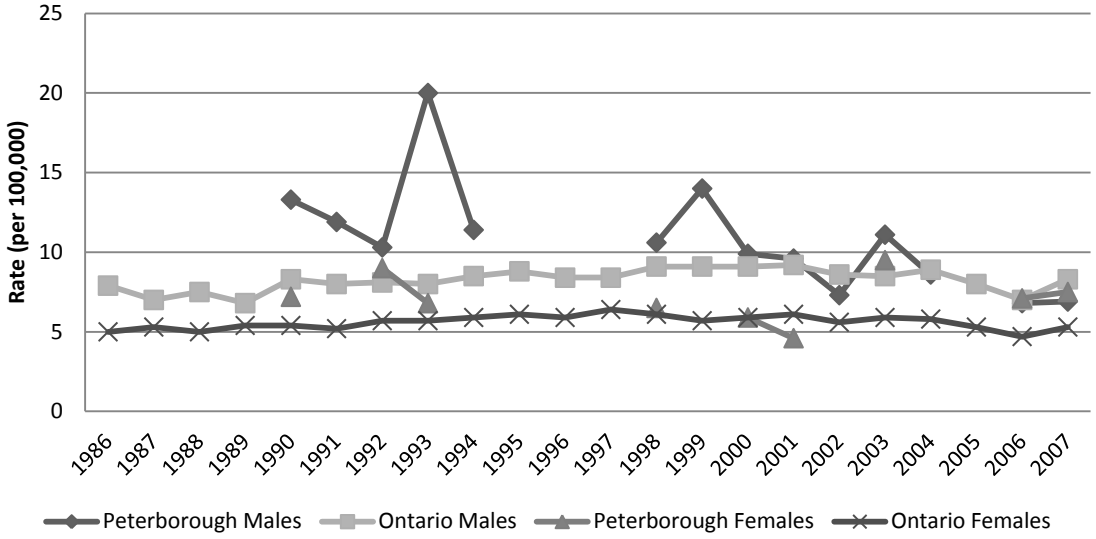
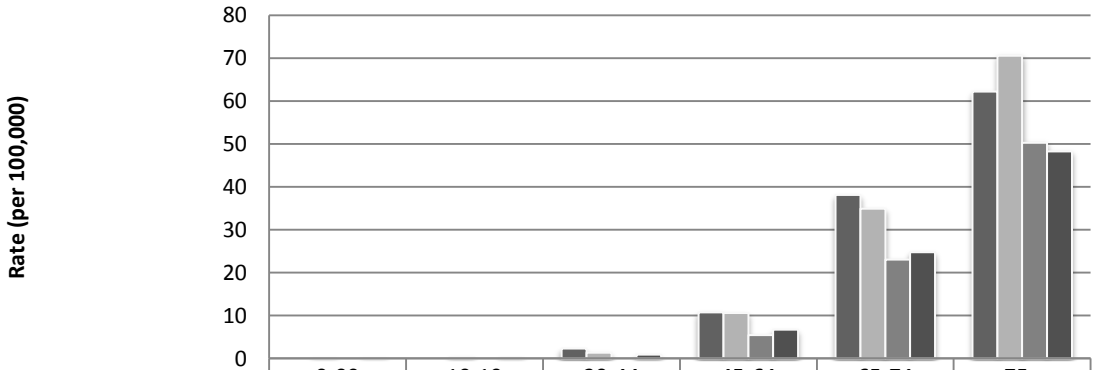


Figure 28. NHL mortality rates in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0	2.3	10.8	38.1	62.2
Ontairo Males	0.1	0.3	1.4	10.6	34.9	70.6
Peterborough Females	0	0		5.5	23.1	50.3
Ontario Females	0.1	0.2	0.9	6.7	24.8	48.3

Figure 29. Age-specific NHL mortality rates in Peterborough and Ontario by sex; 1986-2007

Key Points

- *Incidence rates of NHL are increasing in men and women; incidence in women increased sharply after 2000*
- *Men were more likely to get and die from NHL than women*
- *Trends in NHL mortality in Peterborough are difficult to interpret due to small numbers*

Leukemia

Leukemia is the general term for any of four different types of blood cancer, all of which begin in the bone marrow. The ways in which patients are affected and how they are treated are different for each type of leukemia. Smoking, radiation or chemotherapy, Down's syndrome and some other genetic diseases, and chronic exposure to benzene are some of the acknowledged risk factors. Leukemias are the most common cancers in the young.

In Ontario an estimated 1,100 men and 750 females were diagnosed with leukemia in 2010, representing 3.3% and 2.4% of all new cancers. In the same year, approximately 4.1% (n=600) and 3.0% (n=410) cancer deaths across the province were due to leukemia among men and women, respectively.

Incidence

There were 38 cases of leukemia diagnosed in Peterborough in 2007, the majority of which (28, or 65.1%) occurred in men. The incidence rate of leukemia between 1986 and 2007 was significantly higher among Peterborough men than women by 79.0% (average incidence 17.9 per 100,000 compared to 10.0 per 100,000, respectively) – Figure 30. Incidence rates of leukemia among Peterborough men decreased slightly between 1986 and the early 2000's, however, since 2003 rates appear to have increased. Among Peterborough women, similar patterns in incidence rates also appear to exist. Ontario rates were relatively consistent between 1986 and 2007 and were not significantly different from Peterborough.

Between 1986 and 2007, three out of five new cases of leukemia in Peterborough men and 68.4% of cases among women were aged 65 or older. However, unlike most cancers, age specific incidence rates for leukemia are relatively large for children under the age of nine – Figure 31. Between 1986 and 2007 there were ten and 13 new cases of leukemia among boys and girls under the age of nine in Peterborough. Incidence rates of leukemia among Peterborough females aged 45 to 64 (RR=0.40), 65 to 74 (RR=0.60) and those 75 years and older (RR=0.49) were significantly lower than males. There were no significant differences between Peterborough and Ontario by age group.

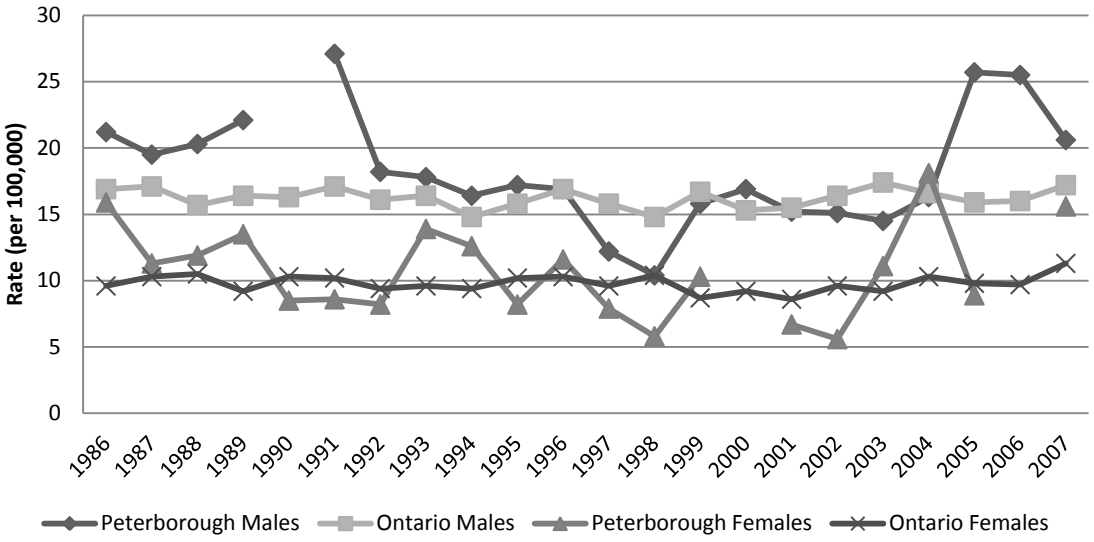
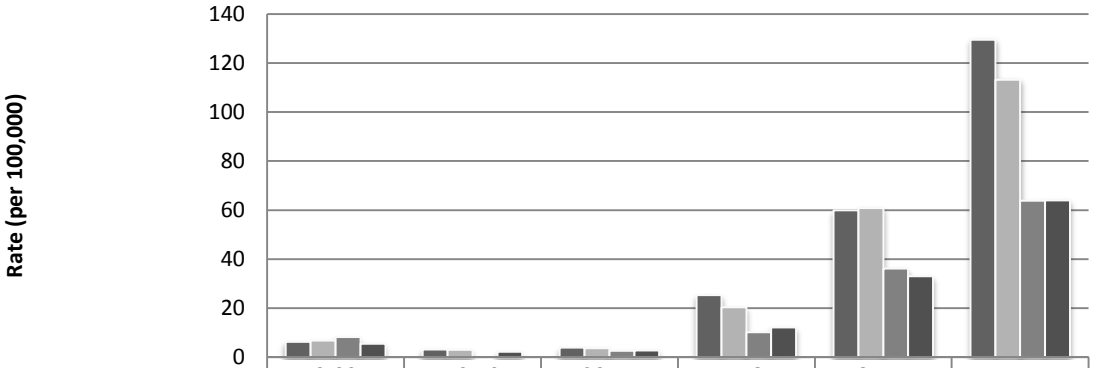


Figure 30. Incidence rates of leukemia in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	6.3	3.2	3.9	25.4	59.9	129.5
Ontario Males	6.8	3.0	3.7	20.4	60.8	113.2
Peterborough Females	8.2		2.6	10.2	36.2	63.8
Ontario Females	5.5	2.2	2.8	12.2	33.0	64.0

Figure 31. Age-specific NHL incidence rates in Peterborough and Ontario by sex; 1986-2007

Mortality

There were 18 deaths attributable to leukemia in Peterborough in 2007, the majority of which (13 or 72.2%) occurred in males. Mortality rates of leukemia in Peterborough men between 1986 and 2007 were significantly higher in men compared to women by 77.8% (average mortality 9.6 per 100,000 compared to 5.4 per 100,000, respectively) – Figure 32. Similar to NHL data, there are many years where fewer than five deaths resulted from leukemia and therefore it is difficult to interpret trends in Peterborough. Ontario data suggest that rates declined slightly between 1986 and 2007 in both men

and women. There were no significant differences in mortality rates of leukemia when comparing Peterborough and Ontario by sex.

The majority of leukemia deaths between 1986 and 2007 in Peterborough males and females occurred in persons 65 years of age and older (78.3% and 87.9%, respectively). There were no deaths due to leukemia in male children (less than nine years of age); however, there were deaths among girl children (less than five; data suppressed). Peterborough women aged 65 to 74 years of age (RR=0.54) and those older than 75 years of age (RR=0.47) were significantly less likely to die of leukemia than men in those age groups – Figure 33. There were no significant differences between Peterborough and Ontario males or females by age group.

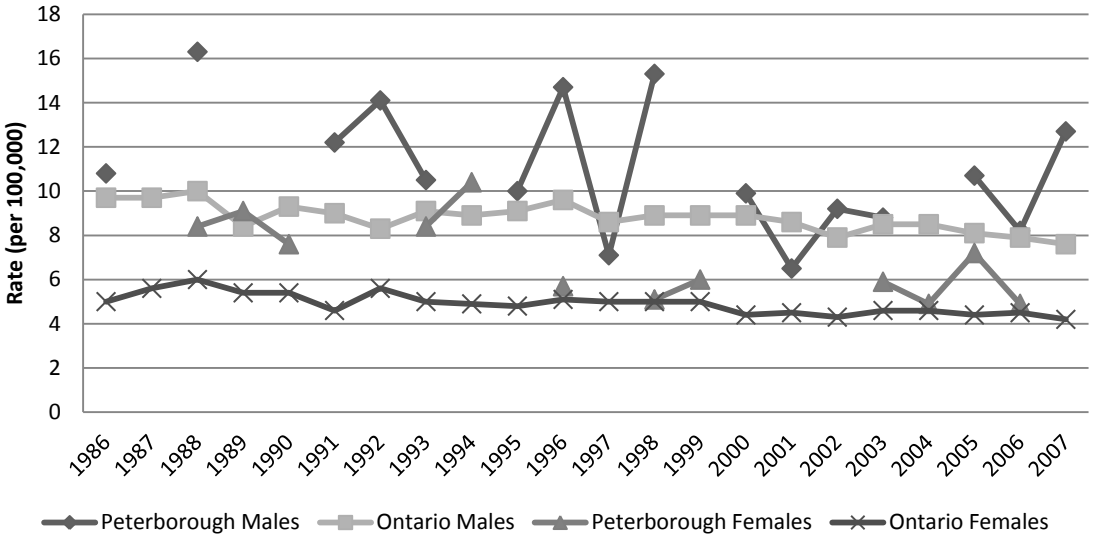
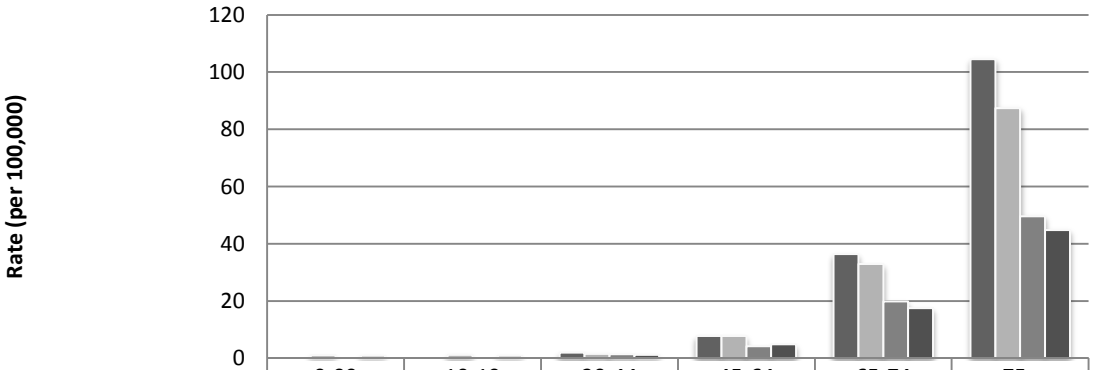


Figure 32. Leukemia mortality rates in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0		1.9	7.8	36.4	104.5
Ontario Males	1.0	1.2	1.5	7.8	32.9	87.4
Peterborough Females			1.4	4.2	19.8	49.6
Ontario Females	0.8	0.8	1.1	4.8	17.5	44.8

Figure 33. Age-specific leukemia mortality rates in Peterborough and Ontario by sex; 1986-2007

Key Points

- *Incidence rates of leukemia in Peterborough appear to increase sharply in the early 2000's*
- *Unlike most cancers, incidence rates of leukemia are relatively large in children*
- *Leukemia mortality rates are decreasing in Ontario and data from Peterborough suggests similar trends*

Bladder Cancer

Nearly all bladder cancers start in the lining of the bladder. Cancer that is only in the lining is called superficial bladder cancer. If the cancer spreads into the muscle wall of the bladder, it is called invasive bladder cancer. Smoking is the most common risk factor for bladder cancer; other risk factors include: diet, increased age, exposure to certain chemicals including industrial dyes and arsenic, and a family or personal history of bladder cancer.

Bladder cancer accounted for an estimated 1,300 (3.9%) new cancer cases diagnosed in men in 2010; among women, bladder cancer is slightly less common, accounting for only 1.5% (n=470) of cancer cases. Similarly, deaths from bladder cancer among males in Ontario occur more frequently than in women (510, or 3.5%; and 220, or 1.6%, respectively).

Incidence

There were 34 new cases of bladder cancer diagnosed in Peterborough in 2007 which occurred predominantly in males (26, or 76.5%). The incidence rate of bladder cancer between 1986 and 2007 was significantly higher among Peterborough males than females by 320.3% (average incidence 22.1 per 100,000 compared to 6.9 per 100,000, respectively) – Figure 34. Incidence rates of bladder cancer in Peterborough men decreased between 1986 and the mid-1990's, however, since that time, rates have increased. Among women in Peterborough, due to the small number of cases, trends in bladder cancer incidence rates are difficult to interpret. In Ontario, rates have been decreasing since 1986 in both males and females. Incidence rates of bladder cancer over this period in Peterborough were not significantly different from the province in either sex.

Between 1986 and 2007, approximately 79.1% of new bladder cases among Peterborough men and 74.1% of cases among women were aged 65 or older. It was rare for cases of bladder cancer to occur in persons younger than 65 years old during this time frame. Incidence rates of bladder cancer among Peterborough females aged 45 to 64 (RR=0.38), 65 to 74 (RR=0.30) and those 75 years and older (RR=0.25) were dramatically lower than males of those ages – Figure 35. There were no significant differences between Peterborough and Ontario by age group in either sex.

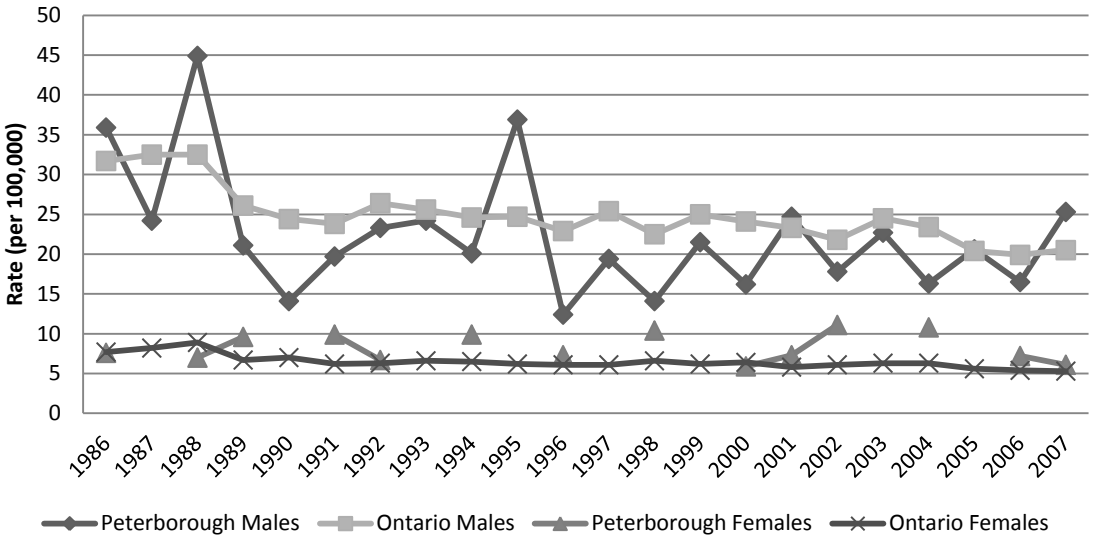
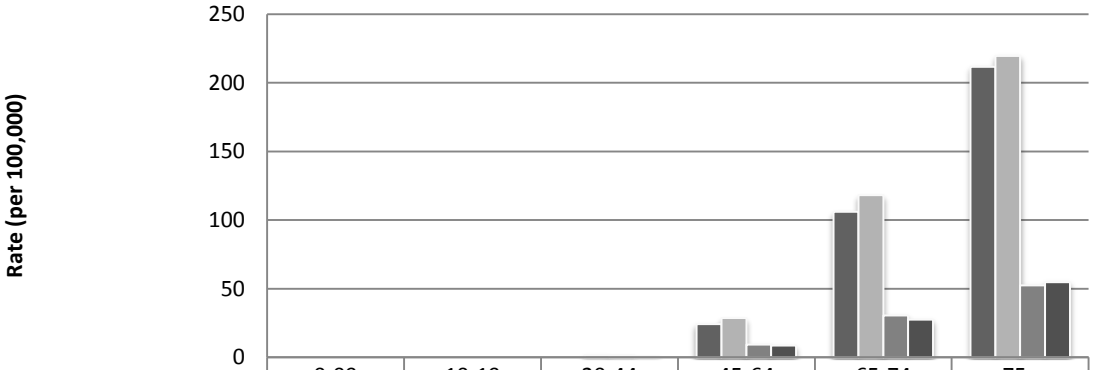


Figure 34. Incidence rates of bladder cancer in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0		24.4	106.2	211.6
Ontario Males			1.6	28.7	118.2	219.7
Peterborough Females	0	0	1.4	9.4	30.7	52.5
Ontario Females			0.7	8.7	27.6	54.8

Figure 31. Age-specific bladder cancer incidence rates in Peterborough and Ontario by sex; 1986-2007

Mortality

There were 12 deaths attributable to bladder cancer in Peterborough in 2007; due to small counts, the sex distribution of deaths will not be disclosed. As deaths due to bladder cancer are relatively uncommon in Peterborough, mortality rates in males between 1986 to 2007 are difficult to interpret and rates in females have been suppressed entirely – Figure 36. Mortality rates among Peterborough men were three and a half times greater than rates among women during this time frame (6.3 per 100,000 compared to 1.8 per 100,000, respectively). Ontario data suggest that mortality rates among

males have decreased slightly, whereas rates among females have been stable. Compared to the province, mortality rates between 1986 and 2007 were not significantly different in either sex.

The large majority of bladder cancer deaths among Peterborough men (82.4%) between 1986 and 2007 occurred in older adults. Nearly all of the deaths among females during this time frame occurred in older adults (data suppressed). Figure 37 illustrates differences in bladder cancer mortality rates in Peterborough and Ontario by age group and sex. Peterborough women aged 65 to 74 and those aged 75 years and older were significantly less likely to die of bladder cancer than men (RR=0.31 and 0.23, respectively). Peterborough men aged 75 and older were less likely to die from bladder cancer than their provincial counterparts by 29.9%. Peterborough females in the same age cohort were significantly less likely to die of bladder cancer compared to women of the same age in Ontario by 60.6%.

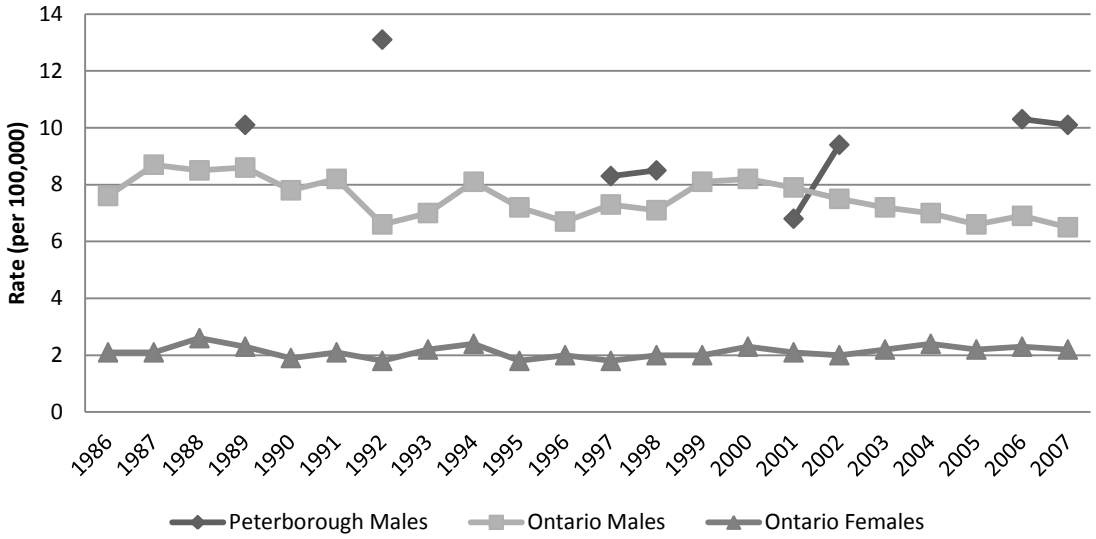
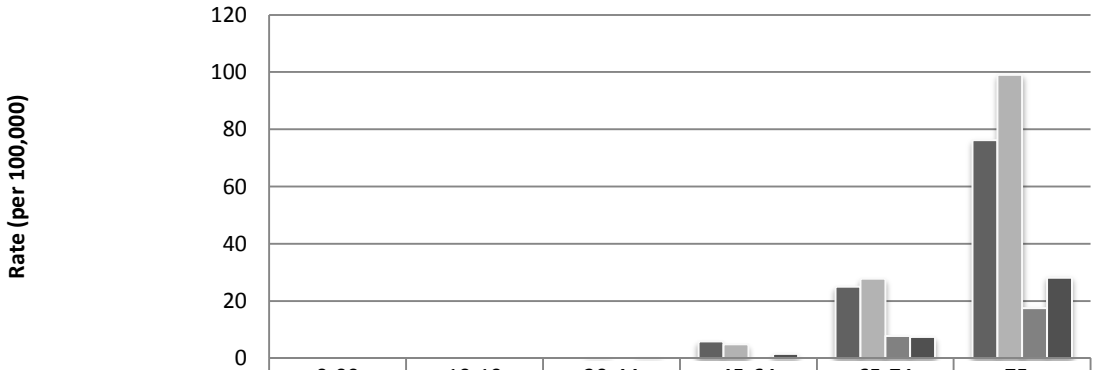


Figure 36. Bladder cancer mortality rates in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0	0	5.9	25.0	76.2
Ontario Males	0		0.1	4.8	27.8	99.0
Peterborough Females	0	0			7.7	17.5
Ontario Females	0	0	0.1	1.5	7.4	28.1

Figure 37. Age-specific bladder cancer mortality rates in Peterborough and Ontario by sex; 1986-2007

Key Points

- *Men exhibit dramatically higher incidence and mortality rates of bladder cancer than women*
- *The incidence of bladder cancer among men in Peterborough has been increasing since the mid 1990's*
- *Men and women over aged 75 years and older were less likely to die of bladder cancer than those of the same age across the province*

Melanoma

Melanoma is a cancer that starts in the cells that produce melanin, called melanocytes, which is responsible for giving colour to the skin. Most melanocytes are located in the skin; almost all melanomas are skin cancers. Melanoma is most frequently found on the back of men and on the back and legs of women. It is the least common, but most serious, type of skin cancer. Risk factors include: personal or family history of melanoma; sun sensitivity (i.e.: sun burning easily); history of excessive sun exposure; and occupational exposure to coal tar, pitch, creosote, arsenic compounds, or radium.

Melanoma accounted for 3.9% (n=1,300) and 3.3% (n=1,050) of new cancers in Ontario in 2010 among males and females, respectively. While melanoma is diagnosed with relative frequency, deaths are rare, accounting for only 1.7% (n=250) and 1.1% (n=150) cancer deaths among men and women in Ontario in 2010.

Incidence

There were 47 new cases of melanoma diagnosed in Peterborough in 2007 with a nearly equal distribution of cases occurring in men and women (24, or 51.1%; and 23, or 48.9%, respectively). Incidence rates of melanoma in Peterborough increased between 1986 and 2007 and during this time frame rates were significantly higher among men compared to women by 32.3% (average incidence 17.6 per 100,000 compared to 13.6 per 100,000, respectively) – Figure 38. In Ontario, rates have also increased since 1986 in both males and females, however, rates in Peterborough were significantly higher by 24.4% and 21.5%, respectively.

Between 1986 and 2007, 47.3% of new cases of melanoma among Peterborough males and approximately 44.1% of cases among females were aged 65 or older. Persons aged 45 to 64 accounted for most of the cases over this time frame (38.8% and 33.5%, respectively). Figure 39 illustrates the differences in incidence rates by age group in Peterborough and Ontario between 1986 and 2007. Incidence rates of melanoma among Peterborough women aged 45 to 64 (RR=0.70), 65 to 74 (RR=0.58) and those 75 years of age and older (RR=0.56) were significantly lower than men of the same ages. Peterborough men aged 45 to 64 had incidence rates 36.2% higher than their provincial counterparts, whereas women aged 75 and older had rates 41.5% higher than the province.

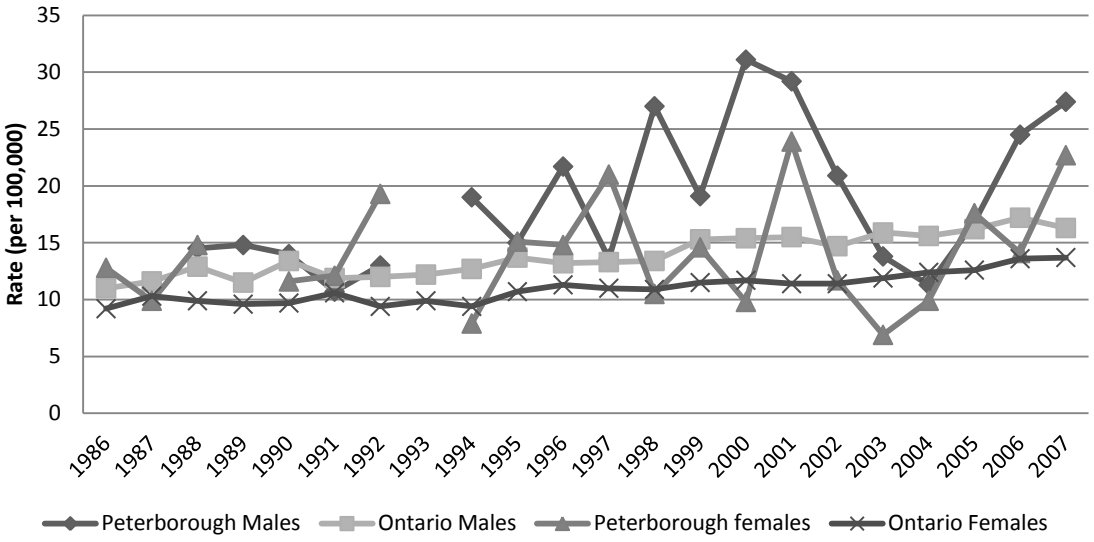
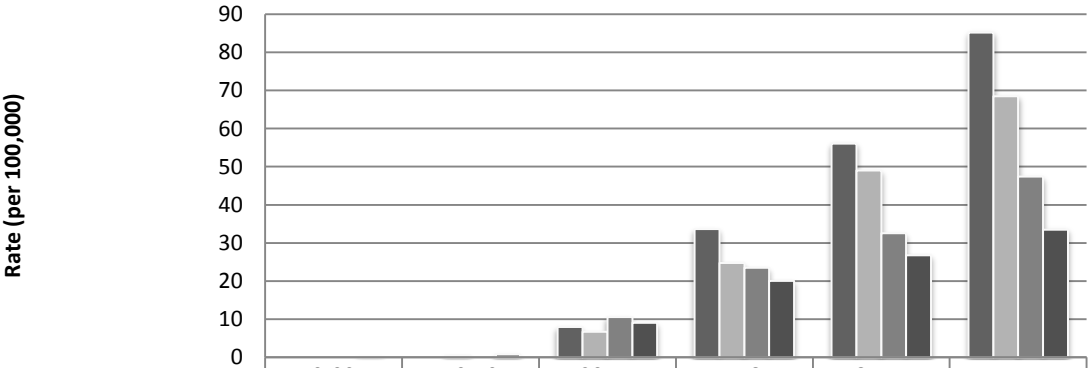


Figure 38. Incidence rates of melanoma in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0	8.0	33.7	56.1	85.2
Ontario Males	0	0.5	6.7	24.8	49.0	68.5
Peterborough Females	0		10.6	23.5	32.6	47.4
Ontario Females	0.1	0.8	9.1	20.1	26.8	33.5

Figure 39. Age-specific melanoma incidence rates in Peterborough and Ontario by sex; 1986-2007

Mortality

There were less than five deaths attributable to melanoma in Peterborough in 2007. Therefore, due to small counts, the sex distribution of deaths will not be disclosed. As deaths due to melanoma are relatively uncommon in Peterborough – only 90 in total between 1986 and 2007 and less than five per year by sex in most years during this time frame – trends over time are difficult to interpret. Mortality rates among males were 60.0% higher than rates among females during this time frame (3.2 per 100,000 and 2.0 per 100,000, respectively). Ontario data suggest that mortality rates among both men

and women have increased slightly since 1986 – Figure 40. Compared to the province, Peterborough mortality rates due to melanoma between 1986 and 2007 were not significantly different in either sex. The majority of melanoma deaths among Peterborough men (60.0%) between 1986 and 2007 occurred in persons aged 65 and over. Similarly, a large majority of deaths among females during this time frame occurred in older adults (84.2%). Figure 37 illustrates differences in melanoma mortality rates in Peterborough and Ontario by age group and sex. There were no significant differences between Peterborough men and women, nor were there differences between Peterborough and the province by age group.

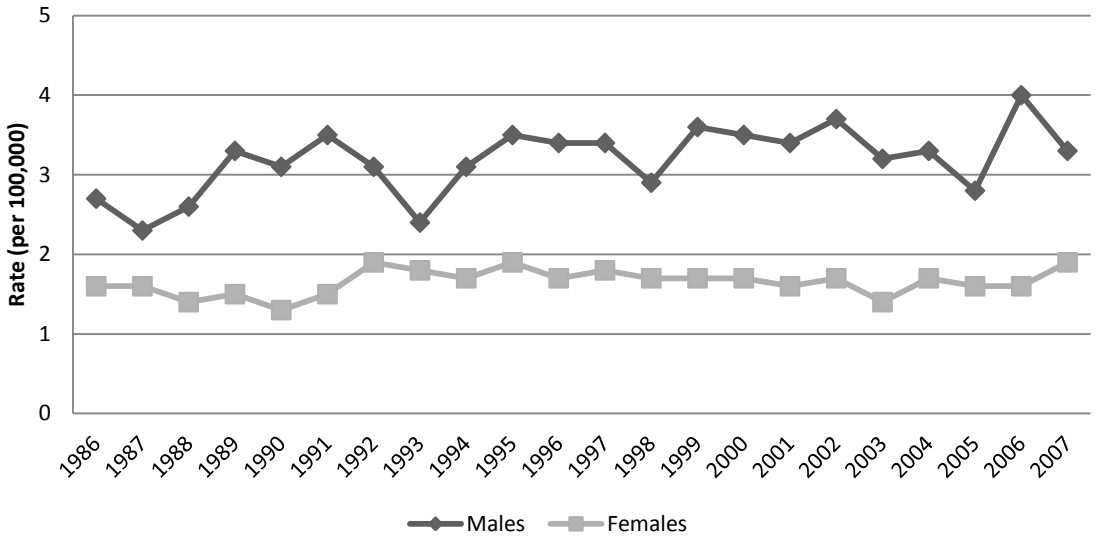
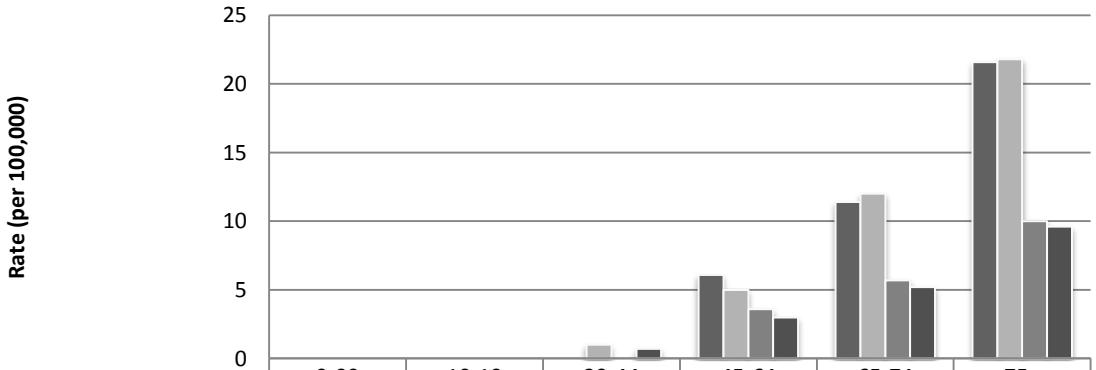


Figure 40. Melanoma mortality rates in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0	0		6.1	11.4	21.6
Ontario Males	0		1.0	5.0	12.0	21.8
Peterborough Females	0	0		3.6	5.7	10.0
Ontario Females	0	0	0.7	3.0	5.2	9.6

Figure 41. Age-specific melanoma mortality rates in Peterborough and Ontario by sex; 1986-2007

Key Points

- *Incidence rates of melanoma are increasing in Peterborough and Ontario and rates are significantly higher in Peterborough*
- *Persons aged 45 to 64 accounted for the most melanoma cases*
- *While melanoma deaths are rare, mortality from melanoma is also increasing*

Uterine Cancer

Cancer that starts in the lining inside the uterus in called uterine cancer or endometrial carcinoma whereas cancer that starts in the layers of the uterus is called uterine sarcoma. The term uterine cancer and endometrial cancer are often used interchangeably. Most women with uterine cancer are post-menopausal and between 45 and 70 years old. There is no single cause of uterine cancer, but some risk factors include: taking estrogen replacement therapy after menopause; obesity; exposure to radiation or chemotherapy; and never having given birth. Uterine cancer is the fifth most common cancer among women, accounting for 5.8% (n=1,850) of new cancers in Ontario in 2010. Deaths due to uterine cancer are relatively uncommon; however, there were 350 deaths due to uterine cancer in Ontario in 2010, accounting for 2.6% of all female cancer deaths. For the purposes of this report, uterine cancers "not otherwise specified", which originate in an unknown tissue, are not considered.

Incidence

There were 26 new cases of uterine cancer diagnosed in Peterborough in 2007. Between 1986 and 2007 the incidence of uterine cancer among Peterborough women was sporadic and did not exhibit a noticeable temporal trend; incidence rates of uterine cancer in Ontario were relatively stable – Figure 42. Incidence rates of uterine cancer in Peterborough during this time frame were significantly greater than the province by 14.7%.

Slightly less than half (45.9%) of the cases of uterine cancer that occurred among Peterborough women between 1986 and 2007 were 65 years and older. Nearly half (48.6%) of the cases that occurred during this time frame were between the ages of 45 and 64; the age cohort that had the largest age-specific incidence rate of uterine cancer were women aged 65 to 74 years of age – Figure 43. Peterborough females ages 45 to 64 had significantly higher incidence rates than their provincial counterparts by 27.3%.

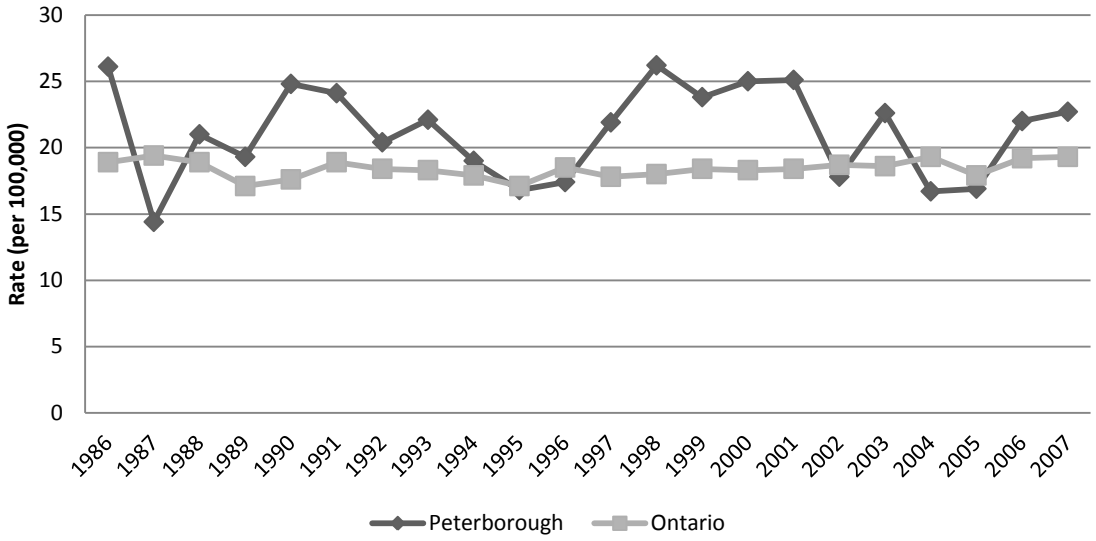
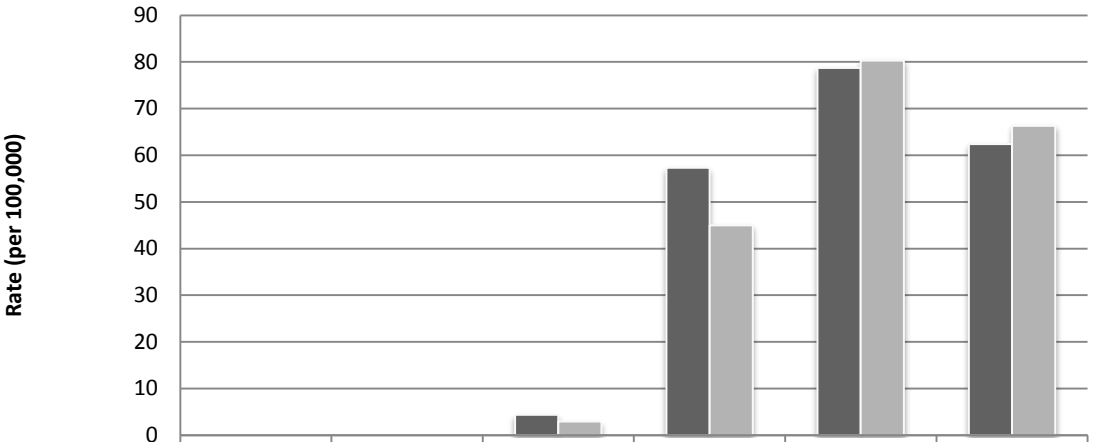


Figure 42. Incidence rates of uterine cancer in Peterborough in Ontario; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough	0	0	4.4	57.3	78.7	62.4
Ontario	0		2.9	45.0	80.3	66.3

Figure 43. Age-specific uterine cancer incidence rates in Peterborough and Ontario; 1986-2007

Mortality

Fewer than five deaths were attributable to uterine cancer in Peterborough in 2007. Due to the small number of deaths per year due to uterine cancer in Peterborough, trends are difficult to identify. Ontario data suggest that mortality rates decreased considerably towards the end of the 1980's and have remained relatively consistent since that time – Figure 44.

Between 1986 and 2007, nearly all deaths due to uterine cancer in Peterborough occurred in women aged 65 and older. Mortality rates of uterine cancer were similar in women aged 65-to 74 and those over 75 years of age and older – Figure 45. Age-specific mortality rates were not significantly different between Peterborough and Ontario.

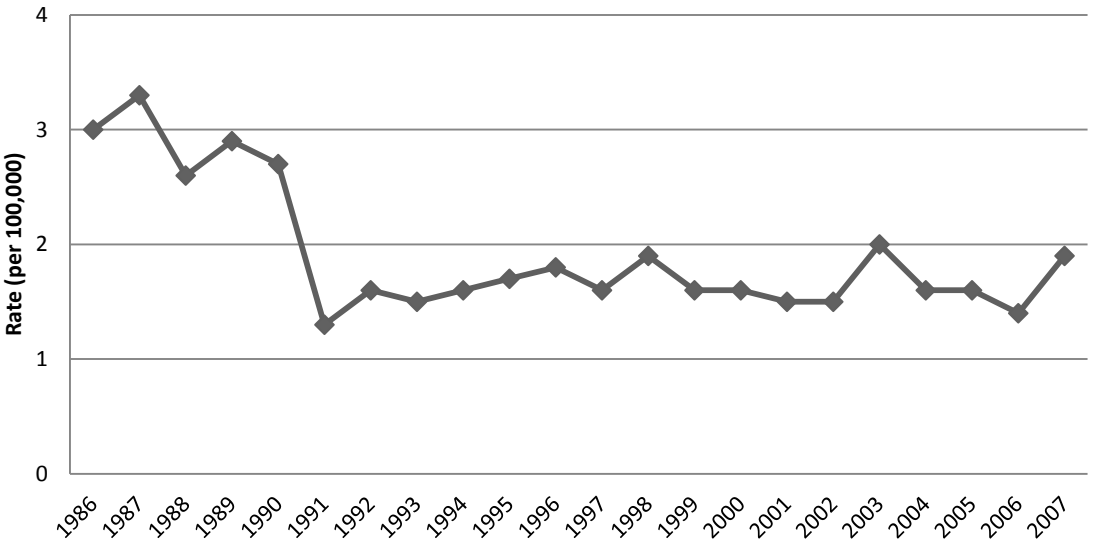
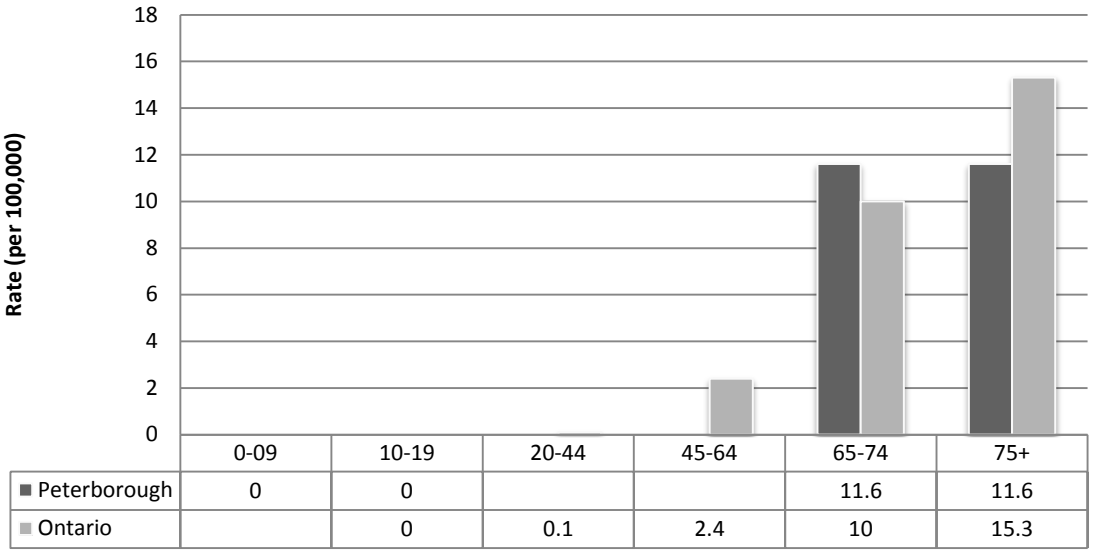


Figure 44. Uterine cancer mortality rates in Ontario; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough	0	0			11.6	11.6
Ontario		0	0.1	2.4	10	15.3

Figure 45. Age-specific uterine cancer mortality rates in Peterborough and Ontario; 1986-2007

Key Points

- *Incidence rates of uterine cancer in Peterborough are significantly greater than Ontario*
- *Women aged 45 to 64 account for the differences in incidence rates between Peterborough and the province*
- *Deaths from uterine cancer are rare in Peterborough*

Oral Cancer

Oral cancer is any abnormal growth and spread of cells occurring in the mouth cavity including the lips, tongue, roof of the mouth, under the tongue, gums, inside the lips and cheeks, and the oropharynx. Most people diagnosed with oral cancer are over the age of 50. Smoking, chewing tobacco, drinking alcohol, infection with the human papillomavirus (HPV), and sun exposure to the lips are some of the major risk factors. Oral cancers accounted for 2.6% (n=870) and 1.4% (n=440) of new cancer diagnoses in Ontario in 2010 among males and females, respectively. Deaths related to oral cancer in Ontario in 2010 were rare: there were 280 men and 150 women who died of oral cancer, accounting for 1.9% and 1.1% of cancer deaths, respectively.

Incidence

In Peterborough in 2007, 23 new cases of oral cancer were diagnosed, the majority of which (18, or 78.2%) occurred in males. Incidence rates of oral cancer among Peterborough men between 1986 and 2007 have been sporadic but have decreased slightly; similarly, rates among Ontario males have decreased slightly during this time frame – Figure 46. Trends in Peterborough female incidence rates are also difficult to identify, though rates are two and a half times lower than males (average incidence 6.4 per 100,000 and 15.9 per 100,000, respectively). In Ontario, female incidence rates have been stable. Incidence rates in Peterborough were not significantly different from the province in either males or females.

A slight majority (51.1%) of males diagnosed with oral cancer between 1896 and 2007 were 65 years of age or older; most cases (42.0%) were between the age of 45 and 64. Similar patterns existed among females during this time frame (56.5% and 43.5%). Peterborough women between the ages of 45 to 64 (RR=0.46), 65 to 74 (RR=0.33), and those aged 75 and older (RR=0.44) had significantly lower rates of oral cancer than men in those age groups – Figure 47. Peterborough women aged 45 to 64 had significantly higher incidence rates than their provincial counterparts by 45.8%, however.

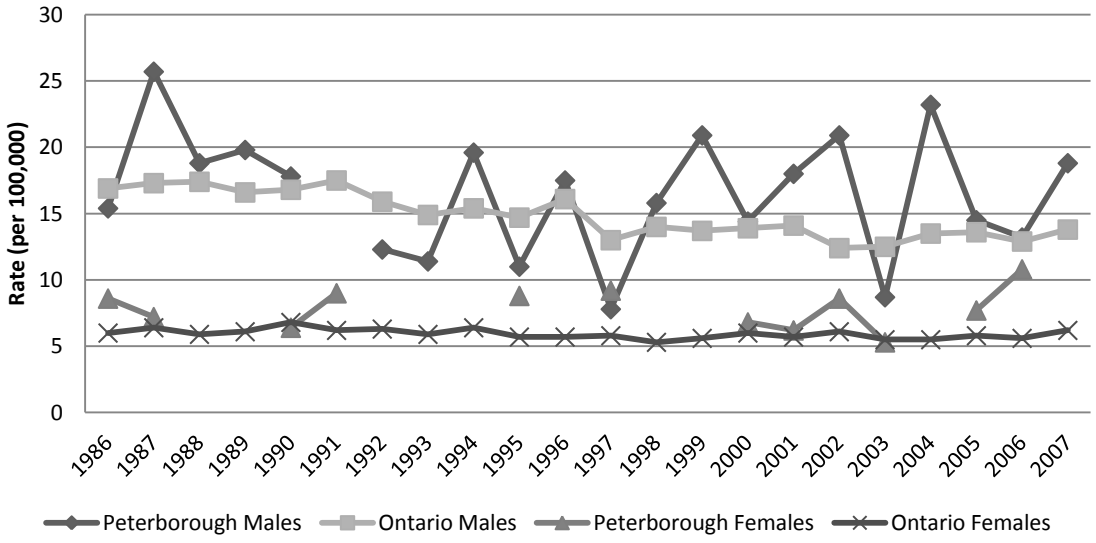
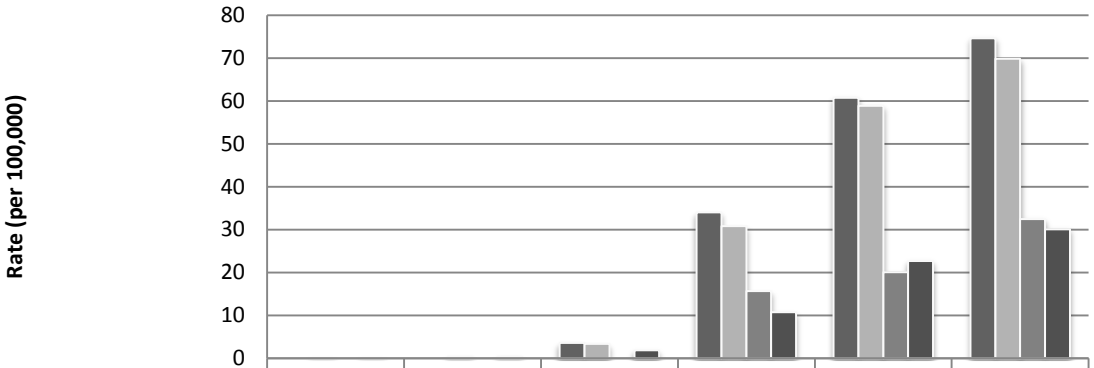


Figure 46. Incidence rates of oral cancer in Peterborough in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males	0		3.6	34.0	60.7	74.6
Ontario Males	0.1	0.4	3.4	30.8	58.9	69.8
Peterborough Females	0			15.7	20.1	32.5
Ontario Females	0.1	0.4	1.9	10.8	22.7	30.1

Figure 47. Age-specific oral cancer incidence rates in Peterborough and Ontario; 1986-2007

Mortality

In Peterborough in 2007 there were 12 deaths attributable to oral cancer; due to small counts, the sex distribution of deaths will not be disclosed. As relatively few oral cancer deaths occur in a given year when broken down by sex, it is difficult to interpret trends for Peterborough. Mortality rates in men (5.8 per 100,000) were nearly three times as large as rates among women (2.0 per 100,000) during this time frame. In Ontario, mortality rates of oral cancer have been decreasing among men since 1986, while rates among women have been stable – Figure 48. Mortality rates due to oral cancer were similar in Peterborough compared to the province between 1986 and 2007.

Approximately two thirds (64.2%) of oral cancer deaths in males between 1986 and 2007 occurred in those aged 65 and older; similar patterns of mortality occurred in females during this time frame (61.0% of oral cancer deaths occurred among women aged 65 and older). Figure 49 illustrates the differences in oral cancer mortality rates across age groups in Peterborough and Ontario. Peterborough women ages 45 to 64 (RR=0.44), 65 to 74 (RR=0.23), and those 75 and older (RR=0.36) had significantly lower oral cancer mortality rates than men – Figure 49. Peterborough women aged 45 to 64 had significantly higher rates than their provincial counterparts by 83.7%, however.

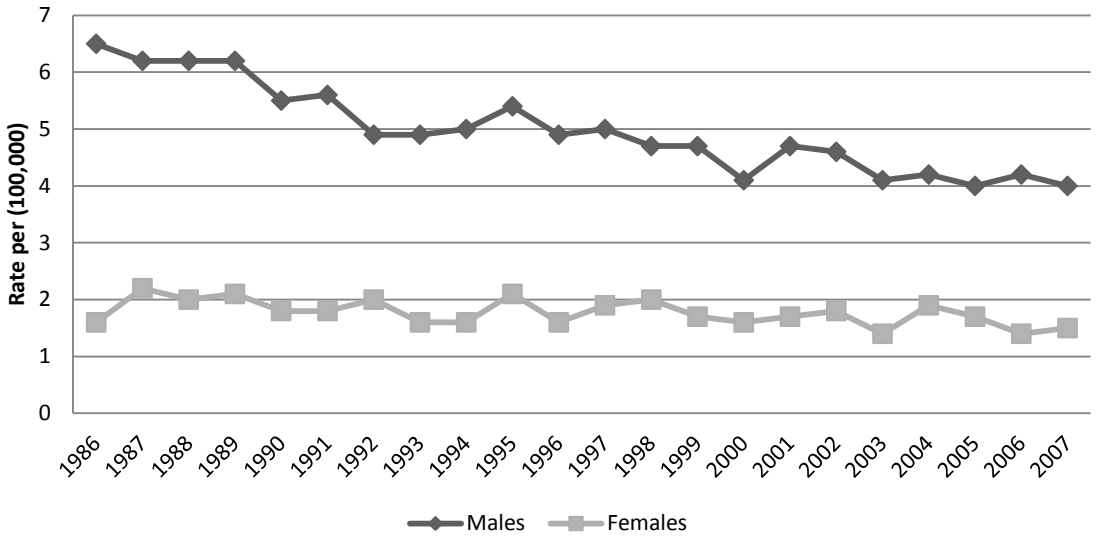
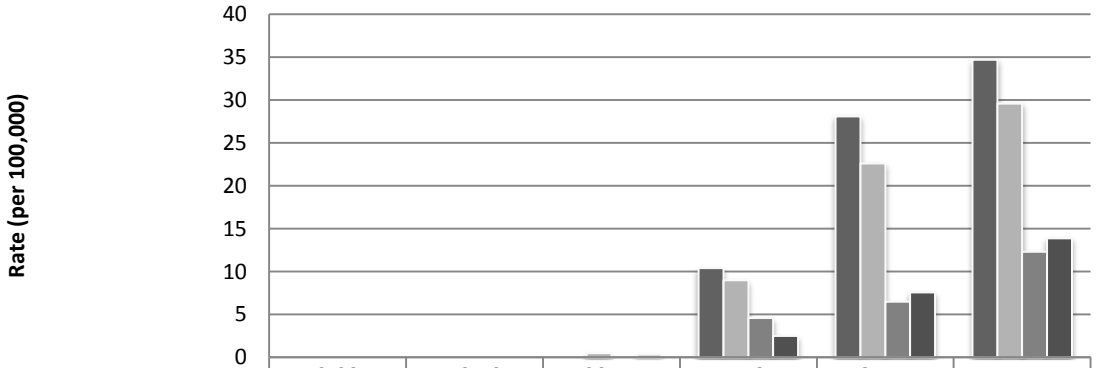


Figure 48. Oral cancer mortality rates in Ontario by sex; 1986-2007



	0-09	10-19	20-44	45-64	65-74	75+
Peterborough Males		0		10.4	28.1	34.7
Ontario Males		0	0.5	9.0	22.6	29.6
Peterborough Females	0	0		4.6	6.5	12.3
Ontario Females			0.3	2.5	7.6	13.9

Figure 49. Age-specific oral cancer mortality rates in Peterborough and Ontario; 1986-2007

Key Points

- *Peterborough men have significantly higher incidence and mortality rates of oral cancer than women*
- *Peterborough women aged 45 to 64 had significantly higher rates of oral cancer incidence and mortality compared to Ontario women of the same age*
- *Deaths from oral cancer are rare in Peterborough*

Risk Factors

Tobacco

The single most important risk factor associated with lung cancer is smoking. Smoking also contributes to numerous other cancers including breast, bladder, cervical etc..

Estimates of the prevalence of current smoking in Ontario men increased between 1925 and 1960, after which rates declined steadily – Figure 50. However, increases in the prevalence of current smoking among Ontario women occurred approximately 25 to 30 years later than men and peaked around 1975. Lung cancer develops long after an individual begins and sustains smoking, and given a lag period of approximately 50 years, the patterns of the prevalence of current smoking parallel reductions in lung cancer incidence and mortality among men between 1986 and 2007 and increases in the incidence and mortality of lung cancer in women during this time frame. More recently, data from the Canadian Community Health Survey (CCHS) indicate that the prevalence of current smoking has decreased in Ontario in both men and women between 2001 and 2007/08 – Figure 51.

The prevalence of male current smokers in Peterborough over that time frame did not change significantly. However, there is evidence to suggest that fewer Peterborough women smoked in 2007/08 compared to 2001. The prevalence of current smoking was lower in Peterborough men and higher among Peterborough women compared to the province in 2007/08, though the differences were not significantly different.

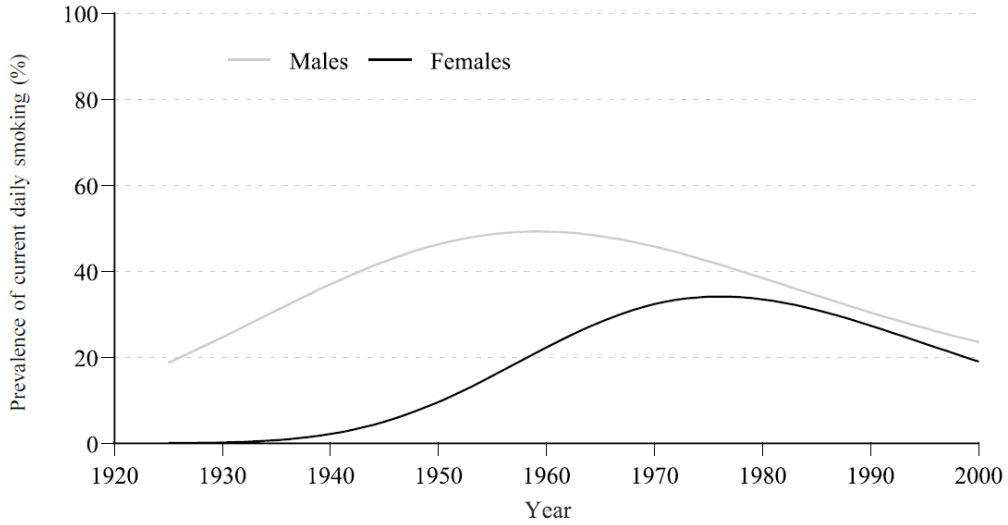
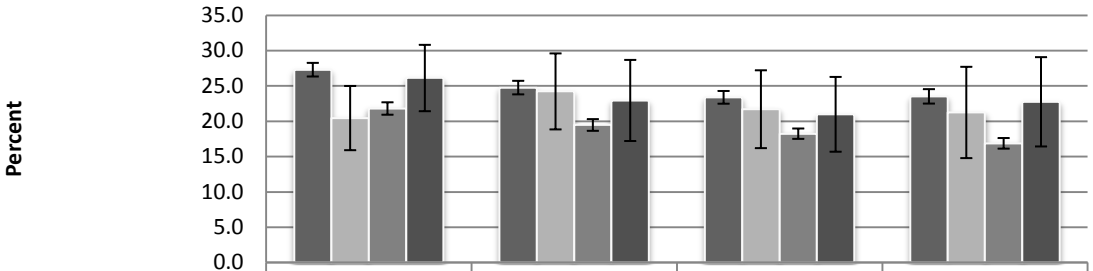


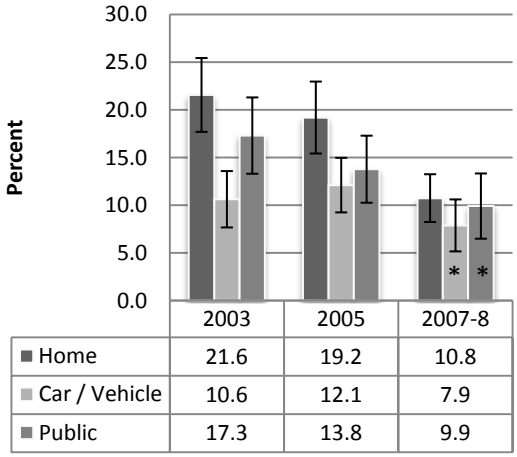
Figure 50. Age-standardized prevalence rate of current daily cigarette smoking in Ontario in persons aged 15 and older, 1925-2000 *(From: Holowaty E., et al. 2002)*



	2001	2003	2005	2007-8
Ontario Males	27.3	24.8	23.4	23.5
Peterborough Males	20.5	24.2	21.7	21.3
Ontario Females	21.8	19.5	18.2	16.9
Peterborough Females	26.1	23.0	21.0	22.8

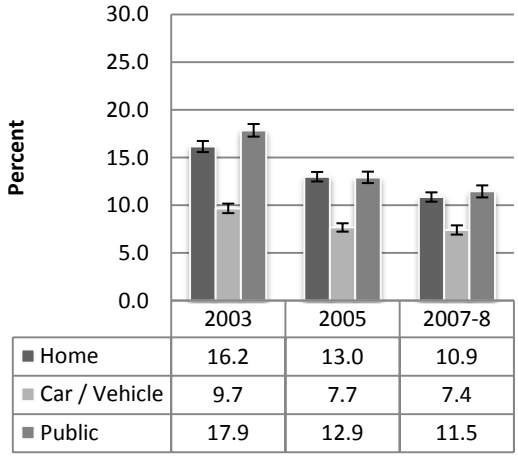
Figure 51. Prevalence of current smokers (aged 12 and older) in Ontario and Peterborough by gender; 2001-2008

Exposure to environmental tobacco smoke (ETS) also plays a role in the development of lung and other cancers. Between 2001 and 2007/08, the prevalence of exposure to ETS among both Peterborough and Ontario residents decreased – Figures 52 and 53. Significant progress has been made in Peterborough with exposure to ETS decreasing in the home by just over ten per cent and in public places by 7.4%. However, a recent sample of Peterborough youth (grades 7-12) indicate that 23% live in homes where there are none or few restrictions regarding smoking in the home and 28% of youth reported riding in a car with a smoker in the previous week.



	2003	2005	2007-8
Home	21.6	19.2	10.8
Car / Vehicle	10.6	12.1	7.9
Public	17.3	13.8	9.9

Figure 52. Prevalence of exposure to environmental tobacco smoke in Peterborough by location; 2001-2008



	2003	2005	2007-8
Home	16.2	13.0	10.9
Car / Vehicle	9.7	7.7	7.4
Public	17.9	12.9	11.5

Figure 53. Prevalence of exposure to environmental tobacco smoke in Ontario by location; 2001-2008

** estimates should be interpreted with caution due to large sampling variability.*

Sun Exposure

The most easily modifiable risk factor for melanoma is excessive sun exposure; skin cancer is largely preventable by decreasing sun exposure and increasing the use of sun protection. Given the prevalence of ultraviolet radiation (UVR)-related cancers people are advised to reduce their UVR exposure. Between 1996 and 2006, however, Ontarians increased their exposure to sunlight without increasing actions to protect themselves from its potentially harmful effects – Table 5. In 2006, more Ontarians travelled to a sunny climate during winter than a decade before and while travelling nearly three quarters of vacationers spent two or more hours in the sun.

Table 5. Comparison of sun exposure and protection from the sun in Ontario adults; 1996 and 2006

	1996 % (95% CI)	**2006 % (95% CI)**
Travel and Exposure		
Travel to sunny climate during winter	16.2 (13.8 – 18.7)	24.2 (20.3 – 28.0)
Two of more hours per day in sun during leisure time	24.5 (21.7 – 27.4)	23.1 (27.8 – 36.3)
Two or more hours per day in the sun while on winter vacation*	58.0 (50.1 – 65.8)	74.6 (66.7 – 82.5)
Protection		
Spends less than 30 minutes per day in sun during leisure time	23.3 (20.5 – 26.2)	17.3 (14.0 – 20.5)
Always/often wears protective clothing and head covering†	25.9 (22.6 – 29.2)	21.1 (17.2 – 25.0)
Always/often wears sunscreen (SPF 15 or greater) on face and body†	24.7 (21.4 – 28.0)	21.7 (17.8 – 25.6)
Tanning		
Uses artificial methods of tanning‡	6.6 (4.9 – 8.3)	9.7 (7.1 – 12.4)

Adapted from: Ontario Sun Safety Working Group, 2010

* among vacationers

† of those spending 30 minutes or more per day in sun during leisure time

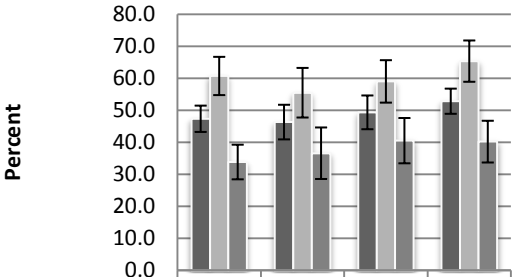
‡ any time of year

The Ontario Sun Safety Working Group found in its 2010 report that some subgroups of the Ontario population tend to have high UVR exposure and are less likely to protect themselves from the sun: young males spend the most time in the sun; young females are most likely to use tanning equipment; and older children are often not protected from the sun. Unfortunately, reliable local data on sun exposure and preventative practices are not available for Peterborough residents and it is therefore difficult to provide some evidence as to why incidence rates of melanoma are considerably higher than the province.

Alcohol, Nutrition and Physical Activity

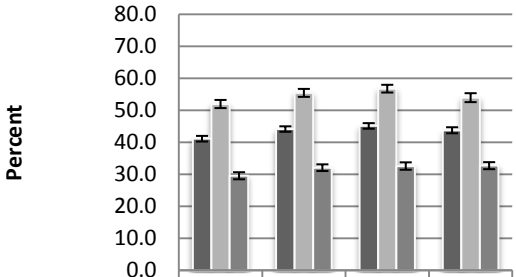
The World Health Organization (WHO) indicates that alcohol is the world's third largest risk factor for premature mortality, disability and loss of health. Alcohol use is associated with increased risk of oral, colorectal and breast cancers. All cancers showed evidence of a dose–response relationship, indicating that increased consumption of alcohol is associated with increased risk of developing one or more alcohol-related cancers. To that effect, hazardous drinking – consuming five or more drinks on one occasion – can be used as an effective indicator of increased alcohol consumption. Data from the CCHS indicate that significantly greater proportion of Peterborough men engaged in hazardous drinking episodes than Peterborough women. In addition, a significantly greater proportion of Peterborough men engaged in hazardous drinking compared to men in Ontario – Figures 53 and 54. While a larger fraction of Peterborough women reported hazardous drinking compared to women in Ontario, the

difference was not significant. Hazardous drinking is on the rise in both Ontario and Peterborough. The proportion of Peterborough adults who drink that reported at least one episode of hazardous drinking in the past 12 months increased from 60.8% in 2001 to 65.4% in 2007/08 among men and 33.9% to 40.3% among women.



	2001	2003	2005	2007-8
Both Genders	47.4	46.4	49.4	52.9
Males	60.8	55.5	59.1	65.4
Females	33.9	36.7	40.6	40.3

Figure 53. Proportion of Peterborough adults who drink with at least one episode of hazardous drinking in the past 12 months; 2001-2008

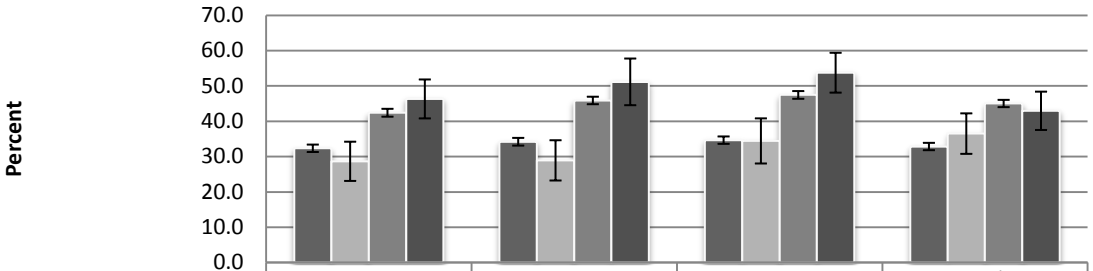


	2001	2003	2005	2007-8
Both Genders	41.2	44.2	45.2	43.8
Males	52.0	55.5	56.8	54.0
Females	29.6	32.1	32.7	32.8

Figure 54. Proportion of Ontario adults who drink with at least one episode of hazardous drinking in the past 12 months; 2001-2008

* analysis only includes adults of legal drinking age (>18 years of age) who answered "yes" to consuming alcohol in the past 12 months

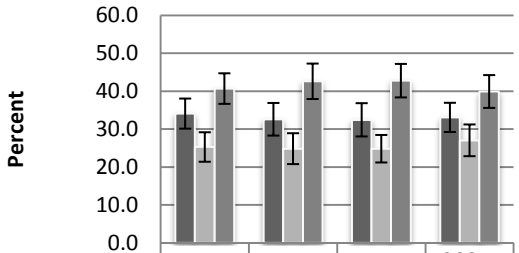
Diet can also play a role in reducing the risk of or contributing to the development of cancer. There is evidence to suggest a diet high in fruits and vegetables (F&V) can decrease the risk of developing oral and colorectal cancers. Conversely, a diet high in red meat and processed meats can increase ones risk of developing colorectal cancer. A significantly smaller fraction of men consume a diet high in F&V compared to women, with only one third of Ontario men getting the required number of servings of F&V compared to nearly half of Ontario women – Figure 55. In Peterborough, the proportion of men consuming five or more servings of F&V increased from 28.7% in 2001 to 36.5% in 2007/08. Conversely, after several years of increases, the proportion of Peterborough women consuming five or more F&V a day decreased from 53.8% in 2005 to 43.0% in 2007/08. The difference in F&V consumption in Peterborough men and women was no longer significant in 2007/08. In addition, in examining both men and women in Peterborough and Ontario, there were no significant differences in the proportion of people who consumed five or more F&V per day.
There is no local data available to estimate red or processed meat consumption.



	2001	2003	2005	2007/08
Ontario Males	32.4	34.2	34.7	32.9
Peterborough Males	28.7	28.9	34.4	36.5
Ontario Females	42.4	45.9	47.5	45.0
Peterborough Females	46.3	51.2	53.8	43.0

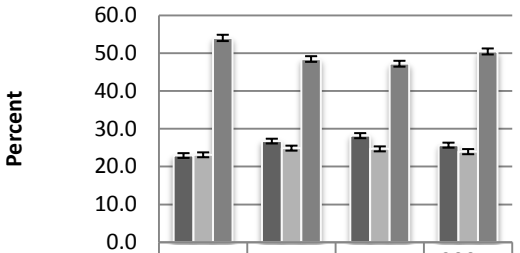
Figure 55. Proportion of males and females aged 12 and older in Ontario and Peterborough who consume five or more fruits and vegetables per day; 2001-2008

There is also good evidence to suggest that physical activity can reduce the risk of a number of cancers including colorectal and post-menopausal breast cancer. Regular physical activity can also reduce body and abdominal fatness which have been shown to increase the risk of developing colorectal and post-menopausal breast cancers. One third of Peterborough residents aged 12 and older were classified as active in 2007/08, which was significantly higher than the province at 25.6% – Figures 56 and 57. In addition, a significantly smaller fraction of Peterborough residents were inactive compared to Ontario (39.9% compared to 50.4%, respectively). In 2007/08, 64.2% of Peterborough men reported being active or moderately active, which was significantly higher than Ontario at 52.5%. A significantly greater proportion of Peterborough women also reported active or moderately active compared to the province (53.3% and 44.8%, respectively).(Data not shown)



	2001	2003	2005	2007-8
Active	34.1	32.6	32.4	33.1
Moderately Active	25.3	24.8	24.8	27.0
Inactive	40.7	42.6	42.8	39.9

Figure 56. Proportion of Peterborough population aged 12 and older who are active, moderately active, and inactive; 2001-2008



	2001	2003	2005	2007-8
Active	22.9	26.7	28.2	25.6
Moderately Active	23.1	24.9	24.7	23.9
Inactive	54.0	48.4	47.2	50.4

Figure 57. Proportion of Ontario population aged 12 and older who are active, moderately active, and inactive; 2001-2008

Screening

There are a number of cancers for which early screening measures exist, including breast, cervical, and colorectal. Unfortunately, for many common cancers such as lung cancer, there are no screening measures. While early screening for prostate cancer exists, recent reviews indicate that mortality rates from prostate cancer did not differ significantly between men who are screened and those who are not.

Breast

The *Ontario Breast Screening Program* (OBSP) makes breast cancer screening easily accessible: women with or without a family physician can be screened through the OBSP. Breast cancer screening is the regular examination of a woman's breasts by means of a breast x-ray – or mammogram – to detect breast cancer early on. Regular breast cancer screening can find cancer when it is small, which means there is a better chance of treating the cancer successfully; the cancer is less likely to spread; and, there may be more treatment options. Between 1989 and 2005, breast cancer mortality rates in Ontario women aged 50 to 69 decreased by 35% due to improved cancer treatments and increased participation in breast cancer screening. The OBSP targets women aged 50 to 69 to be screened with mammography every two years; the target in Ontario is to have 90% of women of this age participate in regular screening by the year 2020. In 2011, Ontario introduced a new screening program for women at higher risk for developing breast cancer.

Cervical

The Ontario Cervical Screening Program's (OCSP) objectives are prevention and early detection of cervical cancer screening with Pap tests, which can detect cell changes and pre-cancerous lesions associated with persistent infection with high-risk types of human papillomavirus (HPV). All women should have regular Pap tests within three years of starting any kind of sexual activity. Pap tests can find cell changes early, long before there are any symptoms and before a diagnosis of cancer. The most effective way or preventing cervical cancer is through vaccination against HPV before sexual debut. Ontario's public health units make the HPV vaccine available, free of charge, to all females in grade 8.

Colorectal

When colorectal cancer is caught early through screening, a person with colorectal cancer has a 90% change of being cured. A province-wide, population-based screening program launched in the spring of 2008 provides funding to screen:

- All asymptomatic, average risk men and women 50 years and older using a simple fecal occult blood test (FOBT) every two years; and
- Those at increased risk, which means those with a family history of colorectal cancer (a parent, sibling or child who have had colorectal cancer), by colonoscopy.

Prostate

There is no provincially funded screening program for prostate cancer. All men are encouraged to discuss with their primary care provider whether they should or should not have a blood test for PSA antigen. Given that many prostate cancers are not aggressive and will not reduce life expectancy, it is not yet clear whether screening with the current PSA antigen test improves outcomes. Research is ongoing.

Recommendations

This is the first time that the Peterborough County-City Health Unit has published a wide-ranging cancer-related report. This information was gathered to assist in developing understanding about incidence, mortality and trends of selected common cancers among Peterborough residents and to provide insight into issues that may be relevant within our local communities. The data presented here can be used to guide future action and suggest a number of recommendations for planning. The recommendations are either general and apply to all cancers and risk factor behaviours, or specific to areas where cancer trends in Peterborough differ significantly from the province:

1. *Advocate for enhanced risk factor surveillance data* to obtain a more comprehensive risk behaviour assessment for the community. For example: In order to advise Peterborough residents on how to enjoy the sun safely, information on their sun exposure habits is needed to support public health and policy makers in developing effective programs and policies to minimize harmful exposure to UVR. In addition, improved local surveillance of tobacco use particularly in youth populations will enable local target setting and allow ongoing monitoring of youth tobacco use and initiation rates.

2. *Further refinement and examination of sub-populations* that had significantly higher incidence/mortality of selected cancers. This includes additional analysis of risk factors and screening behaviours and identification of priority populations, for example: in low income, visible minorities, and older adults.

3. *Identification of additional indicators that may influence cancer outcomes*, for example investigation and measurement of environmental hazards/environmental risks factors for cancer such as radon exposure and examining how the social determinants of health affect local cancer incidence and mortality.

4. *Develop a communication plan to increase awareness and education of cancer risk factors* including smoking, diet, alcohol, sun exposure, and environmental exposures.

5. *Increase knowledge of local screening rates*, including analysis of self-reported screening rates from local data sources, meet with community stakeholders to develop a plan to increase screening rates locally, and advocate with partners to provide aggregate cancer screening data to public health units.

6. Ensure that *public health policies and resources are developed and directed at vulnerable populations*, for example shade policies targeted at outdoor workers and children, prohibiting tanning bed access for children and youth, and the integration of tobacco cessation resources into mental health, substance use, and anti-violence services, to name a few possible examples.

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